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ABSTRACT

A study is reported that investigated whether the foreign language learning outcomes of the poorest performers in Finnish schools could be improved by intensive remedial teaching. An experimental approach was taken with a group of 12 sixth grade students in a suburban school in Helsinki. Four were poor, four were average, and four were good students. All the poor performers were of average intelligence but scored significantly lower than the average and good performers on Raven's Progressive Matrices test and on Hunt's Conceptual Level test. The first 15 lessons of remedial teaching for the poor performers were given in a mixed ability group during half a term. The remedial teaching doubled the number of lessons in Swedish. In testing at this point, the poor performers showed a significant improvement in comprehension but not in production. During the second half of the term the poor performers were given remedial teaching as a separate group, and they were given twice as many lessons as the good and average performers. Testing showed that three of the four poor performers improved significantly in production but not in comprehension. One year later the poor performers had lost all the gains from the remedial teaching, and even scored lower than in the initial test. It was noted that the poor performers had adopted less efficient learning strategies than the other students, showed lack of motivation and responsibility, and had a lack of academic ambition. In one of two later additional experiments, a lasting effect was found possibly due to an earlier start. A tentative conclusion is that intensive remedial teaching can improve learning outcomes, but the poorest performers probably need continuous extra help or well-structured teaching that systemically trains their reasoning abilities. Contains approximately 600 references. (Author/LB)

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Irene Kristiansen

FOREIGN LANGUAGE LEARNING AND NONLEARNING

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RESEARCH BULLETIN 82

Irene Kristiansen

FOREIGN LANGUAGE LEARNING AND NONLEARNING

Academic dissertation to be publicly discussed, by permission
of the Faculty of Education, in the University of Helsinki,
the festivity hall at the Department of Education, on
April 10 at 12 o'clock.

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Foreign Language Learning and Nonlearning

by Irene Kristiansen

Abstract

The main objective of the study was to find out whether the foreign language learning outcomes of the poorest performers in our schools can be improved by intensive remedial teaching. In the first part of the study an attempt was made to find theories that would explain or describe the nonlearning of foreign languages. It turned out, however, that research on nonlearning is very scarce. Not much direct help was obtained from the existing literature.

The rationale behind the remedial teaching given was Hunt´s Conceptual Level Matching Model and the principles of inferential elaboration, developed on the basis of research findings in cognitive psychology. The main experimental group consisted of twelve pupils, 4 poor, 4 average and 4 good performers, from grade 6 in a suburban school in Helsinki.

All the poor performers were found to be average on the general intelligence test (WISC-R). The background data were gathered on cognitive and personality tests, a questionnaire and interviews. The poor performers, though average in general intelligence, scored significantly lower than the average and the good performers on Raven´s Progressive Matrices test and on Hunt´s Conceptual Level test. Field Independence/Dependence, measured on Witkin's GEFT, was not related to foreign language learning.

The group was given an initial test in Swedish, the language chosen for the experiment. The first 15 lessons of remedial teaching for the poor performers were given in a mixed ability group during half a term. The remedial teaching doubled the number of lessons in Swedish. After this period a second language test was given. The poor performers showed a significant improvement in comprehension but not in production.

During the second half of the term the poor performers were given remedial teaching as a separate group. The number of extra lessons for them was again 15, while the average and good performers got only 7 extra lessons. At the end of the period the pupils were given a third language test. Three of the four poor performers improved significantly in production but not in comprehension. All three boys showed considerable improvement, while the only girl did not.

The permanence of the effect was checked by a follow-up test one year later. The poor performers had lost all the gains from the remedial teaching, and even scored lower than in the initial test.

The poor performers had adopted less efficient learning strategies than the other learners. They also showed lack of motivation and responsibility towards their foreign language studies, and their attitude to school was less positive. They all showed lack of academic ambition and of academic hobbies. The poor performers' parents were of lower social status. In the case histories of the poor performers severe emotional problems and signs of neurological disturbances were found.

Two additional experiments were undertaken later, in order to find out whether remedial teaching might have better effect when started at an early stage of studies. One of these experiments gave uncertain results. In the other experiment (30 extra lessons) a lasting effect was found two years later for five of the six subjects. In addition to an early start, other causes as well may be behind this result.

Due to the small sample sizes only tentative conclusions can be drawn. It seems that intensive remedial teaching can improve learning outcomes, but the poorest performers will probably need continuous extra help, or well-structured teaching that systematically trains their reasoning abilities. It seems reasonable to conclude that, due to their low inductive and analytical reasoning, poor performers' cognitive abilities should be developed *before* they start learning a foreign language. They should also get extra help with their mother tongue as well as with their emotional problems as early as possible because these can seriously affect the pupils' cognitive functioning.

Keywords: foreign/second language learning/nonlearning, remedial teaching, conceptual level, inductive and analytical reasoning, elaboration

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PREFACE

The ultimate aim of education is not learning a particular formula or the contents of a syllabus, but to facilitate the personal and mental growth of a person. Education should enable us to know ourselves and our environment. We live in a society where the acceleration of change is tremendous. An adaptation to rapid changes is necessary for our survival and growth. Changes in society and culture require an educational system that is flexible enough and adaptable to new demands. There is a great need to ensure that the contents and types of courses in our schools and in institutions of higher education are subject to a regular review. A lot of work has been done in order to achieve this, but further research is necessary to modify teaching practices and curricula in order to develop our human resources.

The present investigation of the foreign language learning of poor performers was started because the researcher had felt unable to help pupils with learning difficulties, pupils to whom she had taught Swedish or English, or both, for years. In spite of great efforts both on the pupils' and the teacher's part they learnt very little indeed. The problem is familiar to most teachers. The situation at present seems to be just as hopeless as ever, with some pupils unable to understand most of what is said by their fellow students and the teacher, or to make themselves understood in the target language. Watching this year after year as a teacher educator one wants to find solutions for the learning difficulties experienced by these pupils.

When a pupil is not able to learn what is expected, this is usually looked upon from two different perspectives: the hereditary and the environmental. Most experts seem to agree that human cognitive development is determined by a continuous interaction between both factors. The two are inseparable and cannot be isolated in research. If the performance in foreign languages is decided mainly by environmental factors, it could be assumed that intensive long-term remedial teaching, carefully planned in accordance with the principles of learning, would improve the performance of even the poorest performers. If the cognitive dimensions explain the processes involved in foreign language learning, one might also expect a deeper understanding of nonlearning. Neither can one exclude the importance of affective components, as they may influence the cognitive processes essential for foreign language learning.

It is evident that all pupils do not acquire an adequate command of the foreign languages within a few school hours per week. Therefore, it is of great importance to investigate how meanings can be conveyed with different kinds of simplifications of the target language. Simplification is a very common strategy in numerous communicative situations, and might be of great value for a slow language learner. Content words are crucial for the understanding of a message, even in simplified language use. Are the poorest performers able to learn at least them? Whatever the results, the present research is definitely meant as a step towards an improved understanding of the conditions for foreign language learning, and towards meaningful curricula for all pupils.

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First of all, warm thanks are due to Professor Anna-Liisa Leino for her continuous encouragement from start to finish. Without her support the project would not have been undertaken, and certainly not brought to an end. Whenever I have felt helpless and wanted to give up she has always managed to make me go on, convincing me that my work was important and needed to be done. Therefore, it goes almost without saying that I am deeply grateful to her.

My gratitude also goes to Associate Professor Jarkko Leino, who has generously given me hours of his free weekends to discuss various research problems and clarify statistical terms.

Docent Sauli Takala, Ph. D., I learnt to know more than twenty years ago. In all those years he has shown an unfailing interest in my work and encouraged me to do research in a field which does not tempt too many. His expert knowledge of reading and writing as well as his perceptive and discerning insights into foreign language education have been of invaluable help to me in all these years. I happily take this opportunity to express my deepfelt gratitude.

Associate Professor Paul Hellgren has been my philosophical counsellor and critic for years. By asking crucial questions he has compelled me to clarify my thoughts; in fact, he has made me see the importance of serious research work and contributed to my scientific development through innumerous discussions. We both know that our discussions have not always been peaceful, but I have to admit they have been of great value to me. For all this and for his generous help with the present study I offer my honest and heartfelt thanks.

My very special thanks are given to Associate Professor Leena Laurinen. I learnt to know her many years ago in connection with research on elaboration, and since then she has always been available whenever I needed help. Her critical approach to research problems, big as well as small, has contributed considerably to my development. Last, but not least, I want to thank her heartily for her many constructive suggestions for improvements in the manuscript of this book.

Further, I would like to acknowledge the interest and encouragement of Professor Erkki Niskanen, who has perceptively commented on parts of an earlier version of this report. I am also indebted to Professors Pertti Kansanen and Juhani Hytönen. They have repeatedly encouraged me to go on with my research.

Associate Professor Sunil D.Gaur, University of Delhi, gave creative and critical comments on substantial parts of an earlier version of this report, for which I am still deeply grateful to him.

In the school where the long-term experiments were carried out both the Swedish teacher of the students involved, their class teachers and the headmaster willingly offered their full cooperation and contributed decisively to the accomplishment of the experiments. Naturally, the same goes for the teacher trainees who helped me and gave

part of the remedial teaching. In order not to reveal the identity of some of the pupils I dare not thank my good helpers by name, but they shall know this does not mean that my gratitude is less deepfelt.

When the early parts of this report were being prepared I was helped by Birgitta Yliselä, M.A., who for some time typed day and night for me. For this I thank her warmly. Kari Perenius, M.A., considerably improved the figures of the earlier version and created the new ones needed. His editorial skill and sense of beauty and harmony have made this report more readable. For this and for his unfailing patience he deserves my warm gratitude.

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Irene Kristiansen

Irene Kristiansen

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PART A

1. Introduction

1.1. The background and purpose of the study

The school curriculum in Finland requires that all pupils from the age of 8 to 9 have to study one foreign language, and a second foreign language from the age of 12 to 13. One of these languages has to be Swedish, which is the official second language in Finland but spoken as their mother tongue by less than 6 % of the population.

It has been found that quite a few pupils have to study under stress and a continuous negative feedback due to their poor progress. Although a lot has been done to improve teaching methods, poor performers suffer because of the high pressure put on them by the curriculum. In the days of the old grammar school only about 30-50 % of the age group studied foreign languages. Yet a large percentage of the total number of low grades given was in these subjects. The traditional view seems to have been that foreign languages were difficult subjects.

Very little has been done to find causes for poor learning of a foreign language. Nowadays, when communicative competence is stressed, poor performers are even more easily noticed than earlier. Maybe this is why more attention is now being given to the problem of learning foreign languages. Further, the situation in the classrooms has changed. Until the autumn of 1985 it was possible in the upper grades of the comprehensive school to choose between different streams, stream A being the most extensive and the most difficult one, stream C including only the very basic skills, and stream B falling in between these two. Most students chose either stream B or A. The three different streams concerned the first foreign language. For the second foreign language there were two streams to choose between. Now all the pupils starting their foreign language studies have to study the same basic amount, which is a lot more than the easiest stream included. As it is extremely unusual and difficult to be freed from the foreign language instruction, we either have to find ways how to make the poorest performers learn more than just a few words during several years of studies, or to free them from at least one foreign language and give them something meaningful to do instead.

It follows from the above discussion that there is an urgent need to look deeper into the problem that quite a few pupils are facing in Finnish schools. Therefore, the main purpose of the present study is to find out if the performance of the poorest in foreign language learning can be improved. It is not, however, sufficient to study the effect of a certain treatment on the learning outcome, the researcher should also be able to

explore the underlying factors. Another purpose of this research is to investigate if certain cognitive factors mediate the process of foreign language learning. The problems arising from these objectives will be dealt with as follows:

1. Does intensive remedial teaching improve the foreign language learning of the poor performers? If there is an improvement, does remedial teaching have a permanent effect?
2. Can certain cognitive factors explain the mediating processes involved in foreign language learning?

The remedial teaching planned to be given can hardly be expected to give successful results if it is not based on findings about how people learn foreign languages and languages in general, and also why all learners are not successful. We must consider what language learning in general consists of, what one has to learn in order to internalize a language. Language often means communication, so we have to look at the role of language in communication. Language is a code, and it is not always easy to learn new codes. To understand a foreign language the student must know the meaning of at least the most important content words in a message. In addition, words represent concepts, so concept learning is an important factor in language learning.

People differ considerably in their abilities. It may therefore be that, with only a couple of lessons a week, it is not possible for all school pupils to reach the required level in foreign languages. Yet, we all know that even a small child is able to make himself understood with a very limited knowledge of his native language. In the theoretical part of this investigation the key question must be:

> Are there foreign language learning theories that explain or at least deal with learner varieties and simplified forms of language?

If such theories can be found, they might serve as a kind of model for poor learners. Special emphasis will be put on learner varieties and simplified registers. Furthermore, both cognitive and emotional factors as well as their interaction might be of great importance for the learning outcomes.

1.2. The progress of the study

The progress of the study is seen in Figure 1. In order to find an answer to the questions posed for the present research, an experimental investigation was chosen where remedial teaching was given to the experimental group and no such teaching to the control group. In addition, both groups attended ordinary foreign language classes. All the pupils in both groups took a foreign language test before, during and after the different periods of the remedial teaching. The language tests included a comprehension and a production part. Thus, any improvement in the foreign language learning outcome of the pupils could be measured by observing the difference between the pre- and post-remedial performance.

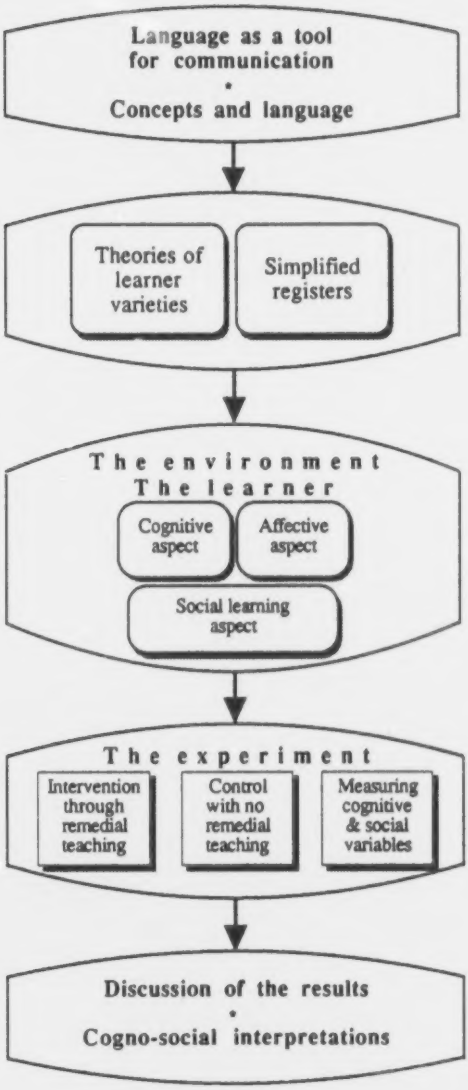

Figure 1. Progress of the study

In order to find if there was any permanent effect of the remedial teaching, a test was given to all the subjects one year after the end of the remedial teaching. Finally, in order to study the second problem area - concerning intellectual and emotional development - it was decided to measure some cognitive-affective dimensions of the personality with the help of tests, questionnaires and interviews. In addition, it was considered necessary to study the case histories of the poor performers more in detail in order to explore more relevant social and emotional factors.

Definitions of some terms used in the study

Foreign vs second language

In this study, the term *foreign language learning* will generally be used. The study is concerned with children learning foreign languages in a school situation. Although the foreign language studied - Swedish - is the official second language in Finland, none of the children in the study spoke it at home, nor did they hear it regularly in their surroundings. It was a completely foreign language to them.

Learning vs acquisition

In this study, the term learning will usually be used. The term *learning* is generally used when the exposure is structured through language teaching (Wilkins 1976). Learning then refers to the conscious study of a second language (Ellis 1985). Second or foreign language *acquisition* is often used when referring to picking up a new language through exposure to it in everyday life, more or less 'subconsciously', whereas the term 'learning' is used to refer to the 'conscious' study of a foreign language. Krashen strongly claims that acquisition is the subconscious process by which linguistic competence is developed as a result of using language for real conversation, and that 'acquired' and 'learnt' knowledge are stored separately (Krashen 1981, 1982, 1985; Krashen & Terrell 1983). At the time being there is, however, no evidence that foreign language learning in natural surroundings really goes on subconsciously. A lot of learning in communicative situations in the classroom may as well be called 'subconscious'. On the other hand, picking up a foreign language through exposure to it in everyday life may be very conscious indeed. The distinction made between the terms 'acquisition' and 'learning' is also based on the assumption that children 'acquire' their mother tongue. If the foreign language students would 'acquire' the new language they are exposed to, then the outcome, the final outcome, should be that all students learn the new language. This is not, however, the case in a school situation. Lowe (1983, 18-19) puts it this way:

> 'The distinction between conscious and unconscious processes in language use is unscientific and confused. Any theory built on this distinction is likely, in turn, to be unscientific and confused.'

To sum up, in this study the term 'foreign language learning' is generally used, referring to conscious and subconscious processes by which a language other than the mother tongue is internalized. The question whether there is a real distinction between 'learning' and 'acquisition' will be left open.

2. The role of language in communication

Man is supposed to have the most efficient system of communicating through language. Language is the system of arbitrary vocal symbols which permits all people in a given culture, or other people who have learnt the language system of that culture, to communicate or to interact (Finocchiaro & Bonomo 1973). Communication is achieved by emitting certain sounds or writing certain symbols that have a particular meaning in them, and which a speaker (or a writer) wants to convey to a listener (or a reader). In other words, codes are used in order to convey a particular message. Essentially, all human languages are spoken or written in terms of codes (symbol or sound).

The process could be illustrated with a communication model. Although at the beginning the model was applied to electrical systems, it can also be applied to studying the process of human communication.

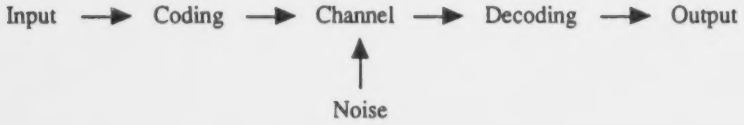

Figure 2. A communication model.

Regardless of the source, contents, and direction of communication, language travels in the form of symbols. In a foreign language learning situation this means that the student must be able to understand at least the main content of what is said or written. In order to do this, he must know the meaning of at least the most important content words in the message. In messages with complicated surface grammar, the deep grammar structure must also be understood. Therefore, it is of great importance in foreign language learning to study how well the students understand what they hear or read, and also whether it has any connection with the understanding of their own mother tongue in similar kinds of contexts.

Since language learning is to a great extent involved with concept formation, we may assume that a child poor in concept formation is likely to have difficulties in language learning. It is reasonable to suppose that concept formation also influences foreign language learning. Learning the mother tongue is part of the child's cognitive development and maturation. If he shows weaknesses in this development, his potentialities to learn a foreign language are likely to be restricted as well. Also, poor language learners often have difficulties in many other theoretical subjects. On the other hand, some people learn five, six, or even more languages without difficulty. They also know their mother tongue well. These findings indicate that concept learning and language ability are important for school achievement, at least in academic subjects based on written words.

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3. Foreign language learning: theories of learner varieties

Several theories of foreign language learning have appeared during the last few decades. They do not, however, seem to offer much help when trying to understand factors behind different levels of the learning outcomes. By far the most ambitious and wide-spread theory of the second language acquisition process is Stephen *Krashen's Monitor Model* (1976, 1977, 1978, 1980, 1981). Although Krashen (Krashen & Terrell 1983) seems to have abandoned the term 'Monitor theory', yet the Monitor, or a kind of mental editor, is one in a set of five basic hypotheses, which together constitute his theory.

Krashen concentrates on describing how somebody *already knowing* what he should say and how to say it monitors his speech. The main purpose of this paper is, however, to understand and improve poor learning. *A person who does not know how he should say something* cannot properly monitor his speech. Another basic hypothesis presented by Krashen is that learning must become acquisition. The main concepts - learning and acquiring - are, however, poorly defined and the hypothesis has not been tested. In addition, not even psychologists know what the difference is, or whether there really is any difference between learning and acquiring. The three other hypotheses: the natural order hypothesis, the input hypothesis, and the affective filter hypothesis, deal with important factors in learning but hardly explain it. Barry McLaughlin (1987, 55) sets four criteria for evaluating an empirical theory:

1) the theory must have definitional precision and explanatory power,
2) the theory must be consistent with what is currently known,
3) the theory must be heuristically rich in its predictions, and
4) the theory must be falsifiable.

It is obvious that Krashen's theory fails to meet these demands. It is also mainly concerned with adult second language acquisition. The theory has met with continuous severe criticism on various grounds by foreign language researchers and theorists. Heavy criticism against it is justified for instance by the fact that Krashen either ignores all criticism against the theory or mentions conflicting evidence in small footnotes, as pointed out by Takala (1984b) in his extensive criticism of the theory. Takala also makes it clear that Krashen ignores practically all evidence about learning provided by cognitive psychologists. The most extensive criticism of all the five basic hypotheses has been given by McLaughlin (1987). In addition to Takala and McLaughlin, Gregg (1984), Taylor (1984), and Ellis (1985), for example, have criticized the theory with well-grounded arguments.

There are several other interesting approaches to foreign language learning, among them Lozanov's suggestopedy (see e.g. 1978) and Prabhu's Bangalore Project (1987). They must, however, be considered as teaching methods that require special kinds of materials, as well as trained teachers. Besides, their cognitive basis is somewhat

unclear. This can be exemplified by the fact that grammar is not practiced systematically through self-generated communication and there is no systematic repetition of vocabulary. Principles of suggestopedy, such as certain kinds of music and relaxation, may successfully be included in any language teaching.

The main problem in foreign language learning research seems to be that most theories describe the learning at an entirely abstract level. Describing is not, however, the same as explaining. We can describe a process by watching it, but what are we to do when a person trying to learn does **not** learn? There is no way to describe a process that does not take place. Instead, we should find out why the learner is not making any progress, and afterwards be able to help.

Foreign language learning is a process of enormous complexity, with a great variety of factors involved. This is probably why no theory offers a complete description of all aspects of both learning and nonlearning, not to mention an explanation.

Having reached the conclusion that not much help is to be found in the existing theories, the only way to proceed is to start looking at the problem from a different angle. A foreign language can be learnt in a variety of ways, at different stages of development, for various purposes, and to *varying degrees*. From this starting-point we go on to look at some theories of learner varieties. During the last 15-20 years several theories of learner varieties have emerged. Because they deal with differences in learning outcome, it is of great interest to look at their view of learning difficulties.

3.1. The Interlanguage Theory

3.1.1. Aspects of interlanguage development

The term 'interlanguage' was first used by Selinker (1972) about the interim grammars constructed by second language learners on their way to the target language. Similar constructs are what Nemser (1971) calls 'approximate systems' and Corder (1967, 1971) 'transitional competence' and 'idiosyncratic dialects'. Selinker defines interlanguage as a separate linguistic system based on the output of a second language learner. The term interlanguage means two related but different things: firstly, the learner's system at a single point of time, and secondly, the series of interlocking systems that characterize the natural development of the learner's *interlanguage continuum*.

The interlanguage hypothesis was originally applied to adult second language performance. It was, however, later (1975) extended by Selinker and his co-workers to child second language performance as well. The assumptions underlying the interlanguage theory are stated by Nemser (1971) as follows:

1) At any given time the approximative system is distinct from L 1 and L 2.
2) The approximative systems form an evolving series.
3) In a given contact situation, the approximative systems of learners at the same stage of proficiency roughly coincide.

The theory is based on the idea that foreign language learners actively and continually revise their underlying grammatical systems as they advance towards the target language. Thus the learners try to reconstruct an abstract system of rules that finally will approximate that of the target system. The interlanguage theory has changed considerably since the 1970s, and is still a constantly evolving theory.

Initially, the methodology most often employed by interlanguage researchers was *error analysis*. The fact that the theory is mainly based on error analysis is both its strength and weakness: strength in the sense that it shows that the interlanguage at each stage is systematic, and weakness because it is not able to account for learner variety of errors, nor why the same person at a certain stage sometimes uses one rule, and another rule on another occasion. *No ways are suggested to provide instruction which could eliminate at least the most frequent errors*. However, the goals of traditional error analysis were pedagogic: errors provide information which can be used to sequence items for teaching or to devise remedial instruction. From the pedagogical perspective it is important to note the shift from a *description* of linguistics systems to a concern with *processes* (see e.g. Corder 1981; Faerch & Kasper 1983).

The most significant contribution of the interlanguage theory and error analysis to practical teaching probably lies in the fact that errors are no longer seen only as evidence of nonlearning. There are, however, not many longitudinal interlanguage studies, yet as early as 1973 and 1974 Dulay and Burt claimed that the vast majority of errors produced by child second language learners were developmental. They also claimed that the 'acquisition order' of child learners remained the same, irrespective of their native language, or of the methods used to score the accuracy of the use of morphemes. These claims have not, however, got support from all researchers (see e.g. Ringbom 1978; Keller-Cohen 1979; Zobl 1982). It has frequently been found that if the target language lacks the construction to be learnt or has a similar construction, but not exactly the same, learning is delayed. (For a summary of criticism against the developmental claim see e.g. Ellis 1985, 1990a; McLaughlin 1987; Widdowson 1990.)

Consistently poor performance, especially for a long time, has first by Selinker (1972), and later by some other researchers, been explained by *fossilization* in the target language. Fossilization occurs when the learner ceases to elaborate the interlanguage in some respect, no matter how long there is exposure or new teaching. This means that certain errors, especially in grammar, become a stable part of the person's interlanguage. According to Selinker, such fossilization results especially from language transfer. Selinker and Lamendella (1978) claim that fossilization occurs either because the learner believes that he does not need to develop his interlanguage any further in order to communicate effectively, or it can occur because changes in the neural structure of his brain as a result of age restrict the operation of the hypothesis-testing mechanism. There is, however, no empirical evidence of the correctness of these claims. Biological and neurological research does not support them, either (e.g. Kean 1988). Longitudinal studies of French immersion programs in Canada do not give evidence for fossilization, although some students seem to learn

to understand better than to produce (see e.g. Harley & Swain 1984). Several other researchers, among them Bialystok, Sharwood Smith and Kellerman, strongly claim that interlanguage grammars are a special case of 'developing grammar' (see e.g. Kellerman 1984; Bialystok & Sharwood Smith 1985; Sharwood Smith 1988; Sharwood Smith & Kellerman 1989).

When evaluating the interlanguage theory we must state that it has - in spite of a growing number of investigations - had a relatively minor impact on foreign language pedagogy. Corder has strongly argued (e.g. 1980, 1984) that interlanguage researchers have an obligation to answer practical questions, yet many researchers are not even interested in pedagogical applications. Corder (1984, 344) also warns against making any serious claims of one sort or another before a lot more native languages have been looked into. Ellis (1985), Brumfit (1984), and Widdowson (1984, 1990) also claim for results that have practical value. According to Widdowson, teachers have the right to know what kinds of activity they should encourage in the classroom to promote the process of language learning. If the findings of interlanguage research cannot be exploited in this way, as providing particular kinds of warrant for teacher intervention, they are of little pedagogical value. The same claim has been made by Selinker (1984), Selinker and Douglas (1985), Bialystok and Sharwood Smith (1985), and Sharwood Smith & Kellerman (1986).

3.1.2. Vocabulary learning and interlanguage studies

In interlanguage research the study of vocabulary learning has been highly neglected. The interlanguage theory has traditionally dealt very little with the lexical behavior of non-native speakers. One of the more extensive investigations that deals with vocabulary learning is Bialystok and Fröhlich's 'Oral communication strategies for lexical difficulties' (1980).

The researchers who have repeatedly stressed the importance of investigating vocabulary learning in connection with interlanguage are Meara (e.g. 1984, 1986, 1989) and Tarone (e.g. 1988). They argue that if the interlanguage theory really intends to account for all the *important* phenomena in second language acquisition, then the lexical problems must be given more attention. There are several reasons for this. According to Meara (1984), learners themselves very quickly identify lexical problems as their greatest single source of difficulty in the target language. Large collections of data show *lexical errors outnumbering grammatical errors by three or four to one*. Furthermore, native speakers faced with learner errors normally rate lexical errors as more disruptive and more serious than grammatical errors. As Meara quite correctly points out, any of these findings alone would be sufficient to justify a serious, large-scale research project on vocabulary acquisition. As reasons for this negligence, Meara mentions the fact that studying lexis is probably much more difficult and complicated than studying grammar. Lexical problems do not readily lend themselves to solution by a rule-based framework. In 1988 Tarone went through 75 studies and found only three empirical studies on variation in interlanguage lexis (Johnson & Sheldon 1987; Poulisse & al. 1987; Cornu & Delahaye 1987). Two of them

are papers presented at the XIth University of Michigan Conference on Applied Linguistics in Ann Arbor.

Taxonomies of lexical errors cannot predict which types of errors will occur or explain why certain types of errors occur; they can, however, give other kinds of useful information. Ringbom (1978, 1987) has shown that Finnish-speaking people make quite different types of errors than Swedish-speaking people. The most extensive studies about vocabulary learning in Finland are by Takala (1984a, 1989a, 1989b, Värre & Takala 1989; Kärkkäinen & Takala 1989a, 1989b; for a bibliography of vocabulary studies, see Takala 1982).

Vocabulary learning is not only a matter of learning second language vocabulary but also of remembering what is learnt. Vocabulary investigations done in the field of cognitive psychology are of interest here. Among others, Bahrick's long-term studies about vocabulary learning are highly informative. His study from 1984, 'Semantic memory content in permastore: Fifty years of memory for Spanish learned in school', showed that retention throughout the 50-year period is predictable on the basis of the level of original learning. In addition to reading comprehension, vocabulary recognition and recall, Bahrick also tested idiom and grammar recognition, and word order. The analysis shows that retention curves decline exponentially for the first 3-6 years. After that retention remains unchanged for periods up to 30 years before showing a final decline. The results support Ebbinghaus's retention curve from 1913/1885.

Bahrick and Phelps (1987) studied retention of Spanish vocabulary over a long period. The subjects were tested for recall and recognition after an interval of 8 years. The results showed that two variables, the spacing between successive relearning sessions and the number of presentations required to encode individual word pairs, are excellent predictors of achieving long-time retention. From poor performers' point of view it is of interest that a word that is learnt only after one or two presentations is remembered better than one that takes several presentations to learn. Bahrick's results contradict the commonly used massed practice of new words, and support research on spaced practice (see e.g. Dempster 1987). They also support the elaboration and the deep level processing hypotheses discussed in Section 8.

Although at the present stage of research interlanguage studies have not contributed much to explain or improve poor foreign language learning, there is good reason to expect that interlanguage research in future will prove to be of great importance when trying to find out what poor learners can achieve. Specifically, it has given important information about the developmental aspect of learning grammatical structures.

3.2. Theories stressing cognitive processes in FL-learning

Learning is a cognitive process, because it is thought to involve internal representations that regulate and guide performance. Among the newest second language learning theories are some cognitive learning theories, which are based on research findings in cognitive psychology and are connected with interlanguage research (Bialystok 1981, 1982, 1983, 1984, 1988; Bialystok & Sharwood Smith 1985;

Sharwood Smith 1988; McLaughlin & al. 1983; Nation & McLaughlin 1986a, 1986b; McLaughlin 1987). These investigators stress the role of cognitive processes in second language acquisition. To learn a second language within this framework is to learn a complex, cognitive skill. This requires the automatization of component sub-skills. Central concepts in these theories are what Shiffrin and Schneider, when discussing human information processing, called *controlled processing* and *automatic processing* (Schneider & Shiffrin 1977; Shiffrin & Schneider 1977, 1984). According to Shiffrin and Schneider, a task requires either a relatively large amount of processing capacity, or it proceeds automatically and demands little processing energy. Automaticity is arrived at through practice. Later, other researchers as well have dichotomized the processing capacity needed for various mental operations. From poor learners' point of view the important aspects here are that *controlled processes require attention, are tightly capacity-limited, and require more time for their activation.* For many poor learners it could be assumed that the processing of language material does not generally reach the level of automaticity.

3.2.1. Bialystok's model

Bialystok's model has been developed during several years and has changed considerably over the years. The later versions (e.g. 1988) strongly stress the principle that language is processed by the human mind in the same way as other kinds of information. Language proficiency is described in terms of an *analyzed / unanalyzed factor* and an *automatic / nonautomatic factor.* These two are independent of each other.

Analyzed knowledge makes *metalinguistic knowledge* possible. In unanalyzed knowledge the learner is not aware of the structure and organization of knowledge. This is characteristic of the early stages of learning. Gradually awareness increases. It takes the form of a propositional mental representation of linguistic knowledge. *Learners possessing only unanalyzed knowledge will be restricted to everyday conversation.* The model does not discuss in greater detail cases where the learner does not advance to a level where the language material is analyzed.

The other dimension in Bialystok's model is the *automatic / non-automatic factor,* which concerns the relative access which the learner has to knowledge. The distinction *automatic* and *controlled processing* stems from Shiffrin and Schneider as discussed above.

Ellis (1990a) states that cognitive learning theory offers a powerful account of how language two learning takes place, but is inadequate because it cannot easily account for the presence of acquisitional sequences. He also claims that Bialystok's theory provides no means of specifying which non-automatic and non-analyzed items of knowledge are developed first and which later (p.182). Ellis's own integrated theory (1990a) deals very little with learning difficulties, while his theory of variable competence could be assumed to be relevant when discussing problems in learning.

3.2.2. The Variable Competence Theory

The Variable Competence Theory (Ellis 1984, 1985) relies on and extends the work done by Tarone (1982, 1983), Widdowson (1979, 1984), and Bialystok (1982). It is based on two distinctions: one refers to the *process of language use*, and the other to the *product*. It claims that the way a language is learnt is a reflection of the way it is used. In the process of language use one must distinguish between

1) linguistic knowledge (or rules), and
2) the ability to make use of this knowledge in discourse (procedures).

The Variable Competence Theory was created more or less in opposition to Krashen's Monitor Model, a 'dual-competence' model. Ellis could not accept a performance-competence explanation in terms of two separate systems, a kind of 'on/off' explanation: either the monitoring was on, or it was turned off (1984, 161).

Instead, Ellis proposes that any learner's competence is variable. This can be best understood by hypothetizing a single knowledge store which is drawn on differently by the learner, depending on the type of language use he is participating in (p. 167). The learner's second language (L2) competence then consists of his knowledge of L2 rules and of his ability to use this knowledge in different ways.

To account for the patterns of variable language use in the classroom, Ellis posits a continuum between entirely communicative and entirely modeled speech (p. 170). Communicative language use involves informal utterances in *unplanned* discourse, while modeled language use involves careful monitoring of speech in order to satisfy the formal norms of correctness as established for use in *planned* discourse (e.g. through the use of drills).

At any single stage of his development the learner has access to a series of alternative rules. Some rules will be characteristic of communicative speech, or unplanned discourse when the learner is only focused on meaning and is given no time to plan his utterances. Then only rules which have become automatic can be used. Some other rules will only be available in planned discourse when the learner is given time and opportunity to plan his utterances (p. 170). Keeping in mind the continuous scale from entirely communicative to entirely modeled speech, it is obvious that many actual instances of language use will reflect more than one set of rules.

A learner does not, however, always acquire and use the correct L2 rules. He may create rules which to him 'make sense' on the basis of the knowledge he possesses and use structures similar to the ones in his mother tongue. Such rules often cause errors in L2 production. This kind of errors will then appear systematically until the learner has abandoned his private rules and acquired the correct ones. It follows from this that learners who are generally poor at understanding rules can be expected to go on producing the same kinds of errors for a long time or forever.

Procedures for actualizing knowledge are of two types: primary and secondary. Each set of processes has an external and internal representation, referred to as discourse and cognitive processes respectively. Ellis uses the term *primary processes*

for the cognitive processes that help create discourse at the *unplanned* end of the continuum. They draw on knowledge that is relatively unanalyzed and automatic. Ellis prefers to call the cognitive processes used in the construction of *planned* discourse *secondary processes* (see Figure 3).

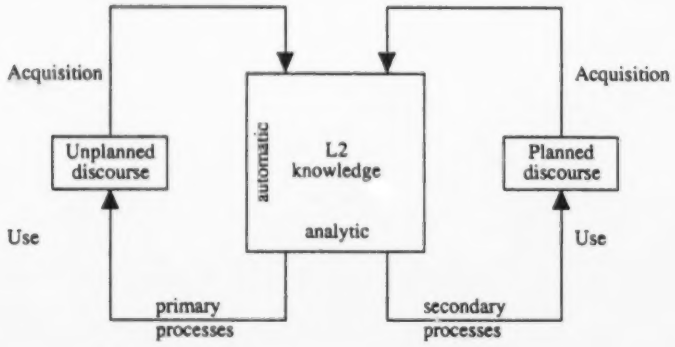

Figure 3. Variable Competence Model of Second Language Acquisition (Ellis 1985, 269).

An example of a primary process is *semantic simplification* (i.e., the omission of elements from a proposition in production). An example of a secondary process is *monitoring* (i.e., the editing of language performance). Discourse and cognitive processes employed are accounted for as follows (1985, 268):

Discourse processes:

Simplify the semantic structure of a message by omitting meaningful elements that are communicatively redundant or that can be realized by a nonverbal device (e.g. mime).

Cognitive processes:

a) *Construct* an underlying *conceptual structure of a message.*
b) *Compare* this structure with the *frame of reference* shared *with an interlocutor.*
c) *Eliminate* redundant elements and elements for which no lexical item is available.

According to Ellis (p. 268), primary and secondary processes account for how second language learners actualize their linguistic knowledge in discourse. They account for the variability of language-learner language by positing that different kinds of knowledge and different procedures are involved in the construction of different discourse types.

Acquisition is accounted for in this way, with development in the language learning occurring as a result of

a) acquisition of new second language rules through participation in various types of discourse (i.e., new rules originate in the application of procedural knowledge);
b) activation of second language rules which initially exist in a non-automatic unanalyzed form so that they can be used in unplanned discourse (p. 269).

When evaluating his theory Ellis points out that it needs to provide a more detailed analysis of the primary and secondary processes responsible for language acquisition and use. Yet, when developed further, the theory might prove to be of great value because it attempts to account not only for the variability of language-learner language but also for the external and internal processes of second language acquisition.

A thorough evaluation of the theory at its present stage is given by McLaughlin in 1987. (For further discussion of variability in interlanguage performance, see Bialystok & Sharwood Smith 1985; Gregg 1990; Tarone 1990; Ellis 1990a, 1990b).

Ellis's theory of variable competence seems to be in accordance with research findings about the relationship between reasoning ability and language learning (see e.g. Genesee & Hamayan 1980; d'Anglejan & Renaud 1985; Laurinen 1985, 1990a; Manis & al. 1987; Kristiansen 1990). The Variable Competence Model does not, however, explain why the poorest performers learn next to nothing. On the other hand, it is not contradictory to what can be observed in the classroom. The performance of any learner can vary, and perhaps this may just as well be explained by the use of various sets of rules as by anything else. When it comes to the poorest performers, the problem, however, seems to be that they follow no rules at all, not even wrong ones.

4. Formulaic speech

The main goal of teaching foreign languages at school is not to teach abstract rules of competence but to enable the learners to understand and produce the target language successfully and meaningfully. Complex utterances are far beyond the poorest foreign language learners at an early stage of studies. Yet, like the other pupils, they want to communicate, use the language they are studying.

In a discourse one can distinguish between *formulaic speech* and *creative speech*. It can be said that the origin of simple formulaic speech is **communicative pressure** (Krashen and Scarcella 1978). Formulaic speech consists of linguistically correct, common expressions which are learnt as unanalyzable wholes and employed on particular occasions (Lyons 1968, 177). Phrases like How do you do? What is the matter? etc. belong to this category. They appear frequently both in the speech of learners in naturalistic second language acquisition, and of classroom learners. They are considered to be very common especially in the early stages of development. Hatch

refers to this type of speech as 'canned speech', other researchers use 'prefabricated routines' and 'prefabricated patterns'. (See e.g. Hakuta 1974; Fillmore 1976; Hatch 1978, 1983a,1983b; Krashen & Terrell 1983; Wode 1980; Hammerly 1982; Bialystok 1983; Sharwood Smith 1983; Littlewood 1984; Ellis 1985; Klein 1986.)

At the beginner level errors in grammar do not disturb communication as much as errors in vocabulary. For this reason phrases which are learnt as wholes, *chunks*, are of greater importance than simplification of grammar for a very poor learner.

The fact that formulaic speech has been eagerly studied especially in recent years is one more proof of serious attempts to solve the problems of those who have learning difficulties. Formulaic speech can be a good device to make the input comprehensible, and it can also help production.

It is a fact that even a lot of exposure to the target language does not necessarily result in any learning. Krashen (1982, 83) tells us about his own family history that he should definitely have been able to learn at least some Yiddish as his parents spoke it around the house for years, occasionally to each other, and constantly to his grandparents. Nevertheless, both he and his sister failed to acquire Yiddish, with the exception of a few phrases and routines. Lots and lots of people have similar experiences. Krashen concludes that it appears to be crucial whether the family language is directed at the child, i.e., whether an attempt is made to make the language *comprehensible*. The Yiddish Krashen heard should have been simplified and made to concern topics relevant to children.

4.1. Prefabricated routines

Formulaic speech, or prefabricated speech as Peters (1983) calls it, can be divided into *prefabricated routines* or *routine formulas* and *prefabricated patterns*. (See e.g. Hakuta 1974; Krashen & Scarcella 1978; Littlewood 1984; Ellis 1984, 1985; Nattinger 1990.) The first type of formulaic speech, routines, are units that are totally unanalyzed and learnt as wholes. Common routine expressions are e.g. How do you do? Nice to see you! How are you? Prefabricated routines are memorized as whole utterances or phrases. The performer may use these without any knowledge at all of their internal structure.

Children frequently acquire chunks as invariable routines and retain them intact for some time before the internal structure is modified in any way (Clark 1975, 320). So, children use these chunks not only as memorized formulas but also as raw material for later segmentation and analysis in developing the rules of syntax (Hakuta 1974; Wong-Fillmore 1979). Children can, for instance, first use an unanalyzed *wannago*, and later begin to analyze this phrase as a pattern with a moveable component, 'wanna +verb': *wannaplay*, *wannaget*, etc. According to Fillmore, the strategy of acquiring formulaic speech is central to the learning of language. What is said of children's mother tongue learning also applies to beginner foreign language learners.

Not only children use prefabricated language but adults use routines as well. A great deal of language that people are exposed to every day is very routine and

predictable. In addition, adults also find prefabricated language an efficient way to begin to learn a new language system (Van Patten 1990). Prefabricated chunks allow for expressions of functions that learners are yet unable to construct creatively from rules.

Routines are important because they serve *communicative purposes*, and thus give the learner the feeling of being able to participate in a discourse, even with minimal knowledge of the language. In foreign language classrooms their value for poor performers is probably not recognized. Yet the use of 'fixed expressions', as they are also called, can serve simple communicative needs as can be seen from the following list:

- greetings (informal:) Hello! (formal, time-bound:) Good evening!
- leavetaking (informal:) So long! or Bye! (formal:) Good-bye!
- acknowledging an introduction (informal:) Pleased/Nice/Happy to meet you! (formal:) How do you do?
- expressing and acknowledging gratitude (formal or informal:) Thank you! You're welcome!
- responding to such requests as: Do you mind if I smoke? Not at all.

(Finocchiaro-Brumfit 1983, 14)

Memorized chunks can be stored and retrieved as wholes when needed. As DiPietro (1982) points out, many communicative language learning activities provide a framework for introducing these phrases, especially when learners interact with others. Entire lines from memorized dialogues can function as routines as well as other expressions learnt from foreign language books. These utterances or sentences are then learnt as such and memorized at the surface level. Nattinger (1980, 1990, Nattinger & DeCarrico 1989) presents several useful lists of formulaic speech for different purposes, to some extent based on Wilkins's notional categories (1976). A brief, typical conversation, is presented below:

- Excuse me?
- Yes?
- The Saturday Market? Where is the Saturday Market, please?
- I'm not sure but I think it's three blocks to the right, next to the Burnside Bridge.
- O.K. Well, thanks very much.
- O.K. So long. (Nattinger 1990, 205)

Routines are easily learnt, maybe because they are so often heard and used. Yet, one does not get very far in language studies with them. The student can be said to have come a step further if he can use at least 'prefabricated patterns', another type of formulaic speech.

4.2. Prefabricated patterns

Similar to a routine formula is a prefabricated pattern. What makes it different from routines is that it has at least one 'slot' which can be filled by alternative items, thus giving the learner at least a small chance to be creative. Many of the prefabricated patterns are, however, used as such. They simply exist as memorized units, as such phrases as 'Understand?', 'Got it?' The important difference between routines and patterns is, however, that patterns give a *frame for modifications:* an expression like 'It's time to eat' can be modified into 'It's time to go home', etc. The particular chunks used by different learners vary. Some common patterns are:

I don't know.
Can I have a - ?
There is no - .
What's this?
I wanna - .
This is a -
I can't speak English/German.... (Ellis 1985, 167.)

Ellis also suggests that formulaic speech can consist of entire *scripts,* such as greeting sequences, which the learner can memorize because they are more or less predictable. Here one could think of examples like:

- Hello! How are you (today)?
- Fine, thanks. How are you?
- Fine, too. I'm sorry, I must rush/go. I'm late. See you later/tomorrow, etc.

It has been suggested in both first and second language acquisition research that formulaic speech serves as the basis for creative speech. Fillmore (1979) is probably the strongest advocate for this view. She bases her opinion on the study of five Spanish-speaking children learning English during the whole school year. She did not just watch children during the year but paired the five children with five English-speaking children for playing sessions, one hour a week. All the children had newly arrived from Mexico, and all five were children of farmworkers. Fillmore got quite remarkable results in two different ways: firstly, there were *enormous individual differences in the results;* secondly, she found that 53 % to 100 % of the utterances in the early stages were of formulaic character, and still 37 % *of the utterances by the lowest user at the end of the first year* (p. 203-241). She concluded that formulaic speech is central to the learning of a language.

Fillmore also found that one of the children knew more English after three months than another after the whole experimental year. She claims that formulaic speech *gradually became creative speech* under the pressure of communication needs. From this it can be concluded that if the teaching situation is planned so that it creates

communicative needs, creative speech can arise from formulaic patterns and routines. For some pupils the amount of the creative use of the target language will be manifold compared with some others. How simple sentences can be combined is learnt by the child by modeling adults .

On the other hand, Krashen and Scarcella (1978) claim that rote-learnt chunks do not lead to creative use of language. Maybe it is difficult to give a final answer to the question, yet it remains a fact that formulaic speech is used a lot by beginners and remains to be very much used by poor performers - if Fillmore's and teachers' observations are valid.

Producing formulaic speech that can promote discourse is better than no speech at all. Good language learners very quickly proceed to creative use of any language, yet the poorest learners should have something 'concrete' to rely on, something they can use in communicative activities. This something could then be formulaic speech in addition to semantically meaningful content words. Even when ordinary pupils are concerned, we must remember that conversations with beginners can never start from zero. This view is very strongly presented by Hammerly, among others, in his 'Synthesis in second language teaching' (1982). Basic, modified, and expanded dialogues - however simple - are valuable from the motivational point of view, especially when young students are concerned. Children learn by doing and acting, not only by listening or by answering questions.

However impressive Fillmore's experiment is, the study leaves some questions unanswered. In her conclusions Fillmore very much emphasizes that the amount of language the children had learnt depended on their social interaction, on their willingness to speak English and to play with the English-speaking playmates. For instance, a boy who did not want to identify himself with his playmates learnt very little, although he was otherwise positively motivated and very much wanted to learn the language. The study does not necessarily show that his inability to learn was so completely dependent on his unwillingness to identify himself with his playmates. After all, not all people who learn a language even have a chance to talk the language studied with anybody at all - and yet they may learn the foreign language concerned very well. There are 'loners' who learn well both at school and among grown-ups.

It is not possible to conclude from Fillmore's study why some children learnt but others did not. Social intercourse certainly was an important factor, but one can criticize the fact that the children were not given any kind of tests on their command of their mother tongue nor on their cognitive abilities in general. Fillmore defends herself against her critics by stating that there were no suitable tests. This defence seems inadequate. If the children differed considerably in their ability to use their mother tongue, that must have affected the rate of acquiring a new language, possibly in a decisive way. How and why Fillmore's study, however, is helpful when developing foreign language teaching that to some extent also *takes poor performers into consideration* can be seen in the summary of cognitive and social strategies she ends up with as the result of the study (p. 209):

Social strategies	Cognitive strategies
S–1 Join the group and act as if you understood what's going on, even if you don't.	C–1 Assume that what people are saying is directly relevant to the situation at hand or to what they or you are expecting Metastrategy: Guess!
S–2 Give the impression — with a few well-chosen words — that you can speak the language.	C–2 Get some expressions you understand, and start talking.
S–3 Count on your friends for help.	C–3 Look for recurring parts in the formulas you know.
	C–4 Make most of what you've got.
	C–5 Work on big things first; save the details for later.

Peters (1983, 13), when discussing Fillmore's study concludes that '...it presents abundant evidence that, at least in this second-language situation, socially relevant formulaic speech was **not** a dead end but led, through a documental process of formulaic breakdown, first to formulaic frames with slots and eventually toward analysis into the conventional lexical items and syntactic patterns of the language.'

4.3. Vertical structures

Language learning evolves out of learning how to carry on conversations. One learns how to interact verbally. The gradual growth of foreign language ability can also be described as a learner strategy called *vertical structures*. They are learner utterances which are constructed by borrowing chunks of speech from the preceding discourse and then adding to these from the learner's own resources (see e.g. Ellis 1985). The development can be illustrated by the following example:

(Native speaker child:) - Come here!
(Language learner child:) - No come here. (=I won't come.)
(Wagner-Gough 1978)

The same phenomenon occurs in foreign language classes:

Teacher: Take a look at the next picture.
Pupil: Box.
Teacher: A box, yes.
Pupil: A box bananas. (Ellis 1985)

In the first example a chunk of speech, the whole previous utterance, was incorporated into the learner's language. In the second example the pupil repeated the teacher's preceding utterance and added an extra noun. The learner's expression was thus arrived at vertically. Ellis (p. 156) suggests that vertical constructions can explain why the 'no + V' pattern is so common in early second language learning. These kinds of constructions are probably even more frequent among beginners or poor learners whose native language has a 'no + V' possibility to express negation. This is the case in Finnish, for instance. The second example also illustrates what is sometimes called 'a repair strategy', common in all language learning.

Vertical structures are considered to be common both in conversations between native speakers or teachers and foreign language learners as well as mothers and their babies. (See e.g. Scollon 1976; Hatch 1978, 1983b; Slobin 1982; Long & Sato 1984.) The function of vertical structures is manifold. A pattern used need not always be immediately incorporated, it can also be stored for later use. In addition, a language learner can, instead of adding something, delete or substitute some parts of the previously used chunks.

It can be concluded that vertical structures certainly facilitate communication at least at a low ability level. Ellis (1985, 156) even claims that discourse in the guise of vertical structures and context dependency offers a powerful explanation for some familiar features of second language learning output. Vertical structures always provide the learner with ready-made chunks of language to memorize and later possibly to analyze. They are also a sign that the input has been comprehensible and has become an intake.

5. Linguistically simplified codes

During the last few decades a change has taken place in attitude towards forms differing from the standard form of language. Only a fairly short time ago, people speaking a dialect were often looked upon as some kind of second class citizens because their language was considered an incorrect and defective form of the language. Now dialects are studied eagerly and their use is encouraged, sometimes even as a formal model in beginner teaching.

Dialects are often richer than the normative language and cannot be regarded as simplified forms of this. Still, they are different and yet mostly understood by other people (except in their most extreme forms). Dialects are taken up here as an example that many varieties of a language can be understood. As another example we can take the Scandinavian languages Swedish, Norwegian and Danish. At least Swedes and Norwegians mostly understand each other in communication, although the two languages differ considerably both in vocabulary and grammar.

There will always be students studying a foreign language who for several reasons cannot reach a very high level of learning. For these persons simplification of the target language may play a positive role in language learning. *Simplification* can be used as

a conscious communication strategy. It can function as a learning (e.g. Ellis 1985) as well as a production strategy (e.g. Tarone 1981). Linguistically simplified codes practically always deviate from standard language use, especially in grammar but often in vocabulary as well.

5.1. The role of error in language learning

As discussed earlier, the Interlanguage Theory has brought about a new concept of error. Several researchers have shown that certain types of error are made by nearly all learners at some stage. Researchers in second language acquisition have for a much longer time than teachers realized that if students are to communicate, individual differences must be reconsidered. If we wish to facilitate autonomous communication by foreign language learners, the attitude to errors must change considerably. In one sense we have to go back to the 'trial and error' stage.

There are multiple causes for errors (see e.g. Sharwood Smith 1979, 1985; Kellerman & Sharwood Smith 1979; Tarone 1982). All language teachers know that the intelligibility of an expression suffers as the number of errors increases, but it is also known that other than semantic errors usually have little effect on intelligibility. As 'early' as 1967 Corder published his paper 'The significance of learners' errors' and defended learner errors which he, though, being very optimistic, considered mostly being mistakes, slips of the tongue. According to him (p. 161-170), making mistakes was a sign of activity, possibly even of learning, and the study of such errors was necessary, preliminary to a theory of second language acquisition. Later Corder (1981) followed this line of thinking, claiming a special status for the language of the learner. Corder stressed that it was not a question of just 'bad' English or 'bad' French, but a communication system in its own right.

Nowadays 'errors' and 'mistakes' are generally considered to be two different phenomena. A mistake refers to a performance error that is either a random guess or a 'slip' in the sense that it is a failure to utilize a known system correctly. All people make mistakes, in both native and foreign language situations. On the other hand, an error is a noticeable deviation from the correct grammar, reflecting the level and quality of the interlanguage of the learner. (See e.g. Brown 1980, 1987.)

It is not always easy to differentiate between errors and mistakes, yet one could probably say that a mistake is something one could monitor after having made it. Pidginization and foreigner talk show us that errors need not prevent meaningful communication. In school situations, with little exposure to the target language, errors could be regarded as a completely normal phenomenon in the development of communicative skills. This would surely be of great importance for the motivation to speak, and even more so when poor performers are concerned. This attitude need not change the assumption that systematic and consistent errors made by the students should be noticed and discussed - but not while they are expressing ideas in the foreign language.

5.2. Pidginization

Practically all language use in foreign language classrooms can be said to be a simplified form of the target language. Different kinds of simplified systems can be effectively used for major communicative purposes. When we talk about learning difficulties, it becomes apparent that a poor learner can hardly produce much more than a very much simplified form of the language concerned.

A pidgin is a simplified and reduced form of language used for communication between speakers with different languages, showing lack of inflectional morphology and a tendency to eliminate grammatical transformations. Nowadays we usually refer to pidgin as a second language which comes into being whenever speakers of a politically, socially, or culturally subordinated language try to acquire some knowledge of a dominant language for specific purposes, for instance for trade (Klein 1986, 30). Pidgin can be characterized by the following features:

(1) Its use is strictly limited to communicative purposes.
(2) It contains features from both languages just as well as some independent features. It has only a limited vocabulary, often absence of gender, marking of tense is overgeneralized, aspects of mood expressed by adverbial particles rather than by verb inflection, and existence of coordinate rather than subordinate grammatical relations between utterances.

It has been claimed that pidgins have much in common with learner varieties developed in spontaneous second language acquisition. Simplifications used in pidgin also occur in a formal foreign language learning situation, and especially persistent they seem to be in poor performers' foreign language use.

The first researcher to pay special attention to this language variety was Clyne, who in the 1960s discovered a number of pidginlike structural features in the language of adult foreign workers in Germany, and called their learner variety 'pidgin-German'. Later Schumann (e.g. 1976, 1978a, 1978b) and Andersen (e. g. 1981a, 1983) have conducted several studies on pidginization, drawing parallels between pidginization and second language learning. Pidgin and early learner varieties have no doubt much in common. Pidgin is usually, however, studied in order to throw light on spontaneous second language acquisition. Schumann proposes pidginization as a model for second language acquisition.

One could also look at the phenomenon from a different angle: to study persistent simplifications made by pupils and look for similarities, and thus throw light on pidginization instead. Learners of a foreign language have an innate capacity to isolate important features of the target language in relation to their most urgent communication needs. Corder's work over a long period (e.g. 1967, 1977,1983) has shown that all people possess capacities to simplify and complicate their language use. This is similar to 'caretaker talk'. Corder (1981) emphasizes that pidginization is a linguistic,

not a psycholinguistic process. There is, however, no research evidence to prove this. Schumann again in his pidgin theory very strongly emphasizes the importance of social factors in language learning, coming close in his arguments to those presented by Krashen. The language learning model based on pidginization Schumann calls The Acculturation Model. According to him (1978b, 34), second language acquisition is just one aspect of acculturation, and the degree to which a learner acculturates to the target language group will decide how well he acquires the second language. Acculturation is defined by Brown (1980, 129) as 'the process of becoming adapted to a new culture'.

Acculturation and second language acquisition are according to Schumann determined by the degree of social and psychological distance between the learner and the target language culture. Pidginization then becomes a result of the learner's social and psychological distance from speakers of the target language. Schumann (1976, 39; 1978a, 261) lists a great number of parameters that fall into the category of social variables: Is the target language group politically, culturally, technically or economically dominant, non-dominant, or subordinate? Is the integration pattern of the second language group assimilation, acculturation, or preservation? What are the attitudes of the two groups? Are the cultures of the two groups congruent? Etc. These variables decide whether the overall learning situation is 'good' or 'bad'. A 'good' learning situation requires for instance that *the languages* view each other as *socially equal*, that *both languages* are *desirous*, that *groups* will *assimilate*, etc.

The psychological factors are affective in nature. They include 1) *language shock*, 2) *culture shock*, 3) *motivation*, and 4) *ego boundaries* (1976). Schumann takes the position that social and psychological distances are the primary factors preventing second language acquisition. He goes very far in his claims of sociopsychological processes underlying second language acquisition. This argument has its main empirical claim in the case of a 33 year old immigrant, Alberto, who in a ten months study of the acquisition of English became 'fossilized' and evidenced very little linguistic gain both in spontaneous and experimentally elicited speech (1976, 78).

The group studied consisted of six persons, and all except Alberto showed normal progress. Alberto's speech can be characterized as a reduced and simplified form of English. Schumann takes the position that Alberto's lack of development is the result of his *social and psychological distance from native speakers of English*. This need not be the main cause, however. There are more aspects to be looked into when considering Alberto's failure. What kind of work did he do? Did he need English at work? Did he live alone? How much and what kind of English did he hear daily? Maybe he worked with other Spanish-speaking people, or even had a job where he did not have very much opportunity to hear any language. This is very often the case with immigrants as long as they cannot speak the language well enough. According to Schumann, Alberto used a lot of his free time listening to Spanish music. Maybe his *reading and language experience in general* was limited. From this we come to another important aspect: *What kind of command did he have of his mother tongue?*

Alberto's case is similar to that of thousands and thousands of immigrants. He had been in the country for about ten years. It is reckoned that in Sweden about one third of the immigrants who have been in the country for ten years can speak very little Swedish (information from the Immigration Office, Invandrarverket). We can hardly say without any evidence that they lack motivation or feel social and psychological distance and therefore cannot learn the language. After all, the surest way to a better job usually goes through a better command of the new language.

The question of causality can hardly be solved through just one subject - Alberto. There are similar case-studies about German immigrant workers, but there is also evidence of people who in spite of excellent mixing with native speakers do not learn the language properly. If there is any causality at all between the target language learning and Alberto's personality, it would be more reasonable to expect the causality to go in the opposite direction: poor target language learning might cause social isolation. Yet it may well be that the causality goes both ways. This view is also shared by McLaughlin (1987, 126).

5.3. Foreigner talk

It is possible that we all have linguistically simpler codes for different purposes, depending on the nature of discourse we are involved in. This technique is not even peculiar only to grown-ups, even children of 3-4 years use simpler language when talking to babies. The most common simplified varieties of grown-ups' speech are probably 'motherese' or 'caretaker speech' and 'foreigner talk'. Foreigner talk refers to the speech native speakers use to simplify communication with foreigners (Ferguson 1971). The native speaker has a tendency to adjust his language use to the presumed potentialities of the foreigner. Such adjustments occur in every domain:

- in *phonology*, when speech is slowed down deliberately and articulation exaggerated,
- in *morphology*, when verbs are used chiefly in the infinitive,
- in *syntax*, when word order is modified, certain elements (copula, article) omitted, and compound clauses avoided,
- in *vocabulary*, when certain words are avoided or supplemented with paraphrases,
- in *communication in general*, when certain topics are avoided and some elements of language communication are replaced by repetitive questions, more attention is paid to comprehension checks, e.g. Do you understand? (Klein 1986, 45)

Researchers seem to agree on the general characteristics of foreigner talk. Richards and Rodgers (1986, 133) claim that it is 'characterized by a slower rate of speech, repetition, restating, use of Yes/No instead of Wh-questions, and other changes that make messages more comprehensible to persons of limited language proficiency'.

As seen from the examples above, there is no doubt that both pidgin, foreigner talk, and poor (and early) learner varieties share many common features. Different researchers, however, seem to take contrasting views of their use psychologically.

Klein (1986, 45) gives the impression of a completely negative attitude to using foreigner talk on the basis that it may hinder comprehension if the learner is fairly advanced in the language. Secondly, the learner may interpret it as a sign of social distance and condescension, and feel insulted when being addressed by this kind of language. On the whole, other investigators seem to be interested in studying foreigner talk as an asset instead, because its main aim is to promote effective communication. Indirectly it may serve a teaching function as well.

Ellis distinguishes between three different types of foreigner talk:

(1) foreigner talk consisting only of interactional adjustments (i.e., there are no formal simplifications);
(2) foreigner talk consisting of interactional and grammatical input adjustments (i.e., there are no ungrammatical simplifications);
(3) foreigner talk consisting of interactional adjustments, as well as both grammatical and ungrammatical input adjustments. (Ellis 1985, 134-135)

Of the three different types, according to Ellis (1) appears to be more common than (2), which again is more common than (3). Which type of foreigner talk occurs is naturally dependent on the proficiency of the foreigner, but also on the age of the speakers and their social relationship. Therefore, foreigner talk is not a static, fixed set of features but a dynamic, changing language type. According to Hatch (1983b), it is a positive element like motherese, as it does not only promote communication but also establishes a special kind of affective bond between the native speaker and the non-native speaker, and it also serves as an implicit teaching mode. The teaching function is only implicit, as the pedagogic effect may arise when successful communication takes place.

Long (1981, 135) claims that foreigner talk has both *formal (=input)* and *functional (=interactional) characteristics*. The input features again are of two different types, both of which also occur in ordinary foreign language classes:

- the native speaker/teacher using input type (1): simplifications within the grammatical rule structure added with simplified vocabulary, and
- the unskilled learner using type (2): language that involves simplifications leading to ungrammatical speech.

Interactional features do not differ in kind from those observed in conversations performed by native speakers. There are, however, differences in the frequency with which specific functions are used. Lists of both input and interaction modifications are given by Ellis (1985, 135-136), for instance. He has in detail compared foreigner talk structure and function in relation to discourse studies involving second language learners in general (p. 142). Ellis stresses the value of foreigner talk as a means to overcome communicative breakdowns and through this its high value and importance for second language acquisition.

Meisel (1980, 13-20) has studied linguistic simplifications in *immigrant workers' speech* in different countries. Both Ellis and Meisel underline the importance of foreigner talk because it may be the only way to convey meaning for the people

concerned: it is the result of the *need* to negotiate meaning and may be the result of universal processes of simplification. Meisel has compared lexical and syntactic features of English, German, French, and Finnish foreigner talk and found that they all use largely the same means of simplification. In addition, these features are almost identical in other simplified varieties of each of these languages. Thus simplifications are certain strategies used by the learner, not the learner's imitation of foreigner talk, as originally suggested by Bloomfield (1933). According to Meisel (p. 22), the similarities of foreigner talk varieties in different languages are indeed striking. He suggests that foreigner talk reflects *universal strategies of simplification*, which are part of a speaker's competence to use a language. The same strategies are seen in interlanguage production, and in the formation of pidgins. (For further discussion on foreigner talk in different countries see e.g. Skutnabb-Kangas & Toukomaa 1976; Klein & Dittmar 1979; Felix 1980; Wode 1981; Meisel 1980; Nicholas & Meisel 1983; Tosi 1984; Håkansson 1987; Spolsky 1989.)

The researchers discussed agree about the formal characteristics of both interlanguage, pidgins, and foreigner talk being very similar, and thus also agree that the simplified form of a language can be the result of a single underlying process where the crucial elements are the same. Because simplification takes place in order to make a message understandable, it must be considered useful for the poor performers. For them all kinds of simplifications that do not distort the message are of great value.

5.4. Motherese or caretaker speech

Another simplified register should be noticed - motherese or caretaker speech. It differs from pidgin and foreigner talk by usually not containing grammatically incorrect expressions. It is described by Ellis (1985, 300) in the following way: 'When mothers speak to their children they typically simplify their speech and make efforts to sustain communication. The formal and interactional characteristics of this kind of speech are referred to as *motherese*. They may help the child to learn the language.' Motherese is mentioned here as a possible model for the teacher when addressing poor performers, and as a possible model for students who find it difficult to produce grammatically refined, complete constructions.

Motherese is a simple code. Its characteristics are that it limits reference to the here-and-now and that it is tuned roughly to the child's assumed comprehension capacity: that is, such input includes much of what the acquirer can say and little of what is slightly beyond him (e.g. Hughes 1983). Its aim is to convey the meaning of what is said to the child, to help the child. It is *a very much simplified form of adult speech* where the meaning is clarified by *repetition* and *reference to the immediate situation*. Simplification can make caretaker speech more suitable as a model for imitation, or at least make understanding easier. Imitation can function as a basis for creative speech.

Among children it has been frequently noticed that imitation occurs mostly at a time when they are just acquiring a certain pattern of vocabulary, when they are in the process of mastering new language patterns. Very quickly they change them slightly,

also operating with creative rules, elaborating what they have heard. The following features of caretaker speech could very well function as an input of the teacher to poor foreign language learners, even when other students have passed the very initial stage:

(1) it is generally spoken more slowly and distinctly,
(2) it contains shorter utterances,
(3) it is more grammatical, with fewer broken sentences or false starts,
(4) it contains fewer complex sentences (e.g. with two clauses),
(5) there is less variety of tenses,
(6) the range of vocabulary is more limited,
(7) there is more repetition,
(8) the speech is more related to the 'here-and-now'.
(Littlewood 1984, 15)

As this special kind of input seems to be an important factor in the learning process for children who cannot extract meaning from complicated sentences, it is most likely to facilitate foreign language learning. Caretaker speech shows how a properly adapted input can make learning easier. With motherese children are provided with 'language lessons in miniature'. We could conclude that all children most probably learn their mother tongue independent of the quality of the input, but they can be helped through its quality, which seems more important to some children than to others. The same could be true about foreign language learning. (For further discussion see e.g. Ellis 1985, 129-132.)

5.5. Teacher talk and peer talk

By now there seems to be a general agreement that speech adjustments facilitate comprehension and have a positive effect on foreign language learning in formal teaching situations (e.g. Krashen 1981, 1982, 1985; Snow & Hoefnagel-Höhle 1982; Hatch 1983b; Long 1983, 1985; Håkansson 1984, 1987; Lightbown 1985, 1987).

The general method used is correlational studies, in other words, comparing features of the input with those of the output. This kind of method must be considered fairly uncertain when learning in natural surroundings is investigated, due to difficulties in controlling the quality and quantity of the input.

In controlled formal foreign language learning situations simplification has been studied by e.g. Long (1985) and Håkansson (1987). Long prepared a 'native speaker version' and an easier 'foreigner talk version' of a lecture. Both versions were recorded. Non-native students listened to the lectures and answered multiple choice questions on the content. The results confirm the hypothesis that modified speech is easier to understand. The speech modifications studied by Long (1985) were:

- slower speech rate
- shorter sentences
- fewer subordinations
- more rephrasing, and
- more restatements.

The effect of input was studied by Håkansson (1987) in an experiment where nine experienced teachers of Swedish as a second language were asked to retell the same story twice, once to a group of Swedish language learners, and once to native speakers of Swedish. The input of the teachers was thus also controlled. The comprehension of the narrative was controlled by giving content questions to be answered. Håkansson found that the *teachers who used the original wording of the text and only modified the speech rate did not succeed in making the contents comprehensible to language learners at all.* As Håkansson points out, answering content questions also measures memory and production, since the answers were given in the target language.

All the studies give support to the hypothesis that speech adjustments facilitate comprehension. The question of which modifications are optimal is, however, still unanswered. In Håkansson's study (1987) the learners' comprehension was better in groups where the teacher either used a reduced set of words and structures and a slow speech rate, or elaborated on the text and made its implicit information explicit. Chaudron and Richards (1986) found that the metastatements of the major ideas in the texts used aided comprehension best. These help the learners to organize the main ideas. Kelch (1985) also found different kinds of facilitators, the best being the reduction of the speech rate.

Håkansson (1987) showed in another experiment that Teacher Talk is not a static register but a highly variable one. In a classroom study six teachers were recorded two or three times at intervals of five weeks. The teachers were giving immigrants regular teaching in Swedish as a foreign language. The results show that although the simplification tendencies are the same, there are *great differences in the degree of modifications among the teachers, and different individual strategies give different kinds of results.* All teachers' speech developed as the learners became more proficient, yet there was always a discrepancy between the structures used in the teachers' speech and the structures taught. Typical features for all teachers when addressing beginners were for instance:

- very short sentences (mean 5.4 words)
- lack of subordination
- subject-verb-object word order
- little lexical variation
- low speech rate
- lack of noun phrases.

What is of great importance from a poor learner's viewpoint is that in as short a time as five weeks the teachers' language became more difficult in all these aspects, most significantly in *sentence length* and *lexical variation. These results clearly indicate that poor learners very soon become handicapped in a classroom teaching situation.*

Simple input is not always enough - the input must be a comprehensible input from the learner's point of view. This means that the text in the textbooks and the teacher's talk must contain 70 - 90 % semantically familiar content words. (See Takala 1984a.)

This requirement puts an enormous burden on the teacher, not only at the beginning but especially after a few years of studies, when the vocabulary of some students is

manifold compared to the vocabulary of the poorest. It is then easy to find out that *most of the time the poorest performers do not understand at all what is said in the classroom.* If there are no visual props for the lesson being studied, it is very much probable that some students hardly understand more than 5 - 10 % of what is said.

The importance of comprehensible input, especially when poor learners are concerned, has not always been understood or realized. Most of the students in the class are more or less able to follow the teaching, and it is easy to overlook those who do not understand what is going on. Krashen (e.g. 1981, 1982) argues very strongly for comprehensible input in the form of the input hypothesis. According to him, second language acquisition is completely dependent on comprehensible input. Only after that can the learner's internal processing begin (1982, 21). It is generally accepted that the input at least for average and good performers should be slightly more advanced than the level of production demanded, a view also held by psychologists for a long time. Too difficult input depresses while too easy input bores.

All investigators seem to agree about the quality of the input. The results about the quantity of input are partly contradicting (see Ellis 1985). Seliger (1977) and Takala (1984a) found a correlation between the quantity of input and achievement. Fillmore (1982) stresses both quantity and quality in determining the rate of foreign language learning. One could of course say that common sense tells us that both are important. Yet this is not enough: it all depends not only on comprehensible input but on whether the learners *pay attention* to it or not (see e.g. von Wright 1986, 1989).

One more point must be noticed when discussing learning from verbal input, at least in classroom situations. **Peer talk** has seldom been dealt with by researchers except when it occurs in natural settings. The general view seems to be that the native speakers simplify their speech when talking to elementary learners. Their talk tends to remind of foreigner talk or pidgin. From this it would be natural to assume that *most of the classroom talking should be done by the students* - for the simple reason that the input then becomes more comprehensible. Besides, students are often more interested in listening to each other's talk than to the teacher's talk.

This is especially true when learners' own *ideas* are exchanged, when *communication* in the target language takes place, and not only the teacher's questions are answered. Yet it seems to be very difficult for many teachers to let the students do most of the talking. (For a detailed analysis of teacher talk / peer talk see Sinclair & Brazil 1982; Edwards & Westgate 1987; Dillon 1988; Perrott 1988.)

One could conclude that if we are to think of the poorest performers, the main prerequisite is that they get a chance to listen to language they understand, their peers expressing ideas, and that they gradually get a chance to take part in it, everyone according to his own abilities.

6. The affective domain and foreign language learning

In the previous chapter it was described how at least for communicative purposes it is helpful for the foreign language learner to be confronted with a simplified version of the target language, especially so for a slow learner. If this requirement is met, i.e., simplifying the input to make it more easily understood, why are not all foreign language learners who are exposed to the language successful? The language in foreign language classrooms is also sequenced for complexity: at the beginning only very simple grammar and fairly concrete vocabulary are presented. If this is enough for the learning process to take place, then everybody ought to show about equal progress in learning, especially because *all school children have already learnt one language - their mother tongue. Thus they should also be able to learn another language.*

There are many explanations for the failure of classroom teaching. Some of these have to do primarily with cognitive, some with emotional factors. It is doubtful that poor learning can ever be explained by one factor, or even by a few factors. As learning in a foreign language classroom necessarily becomes very much an intellectual exercise, one could assume that cognitive factors are of the utmost importance. However, motivation is also very often considered necessary for learning to take place. These factors will be dealt with on the following pages.

6.1. Motivation

The motivation of human behavior is an extremely large and complex subject. Many investigations and theories of motivation have been and are being made, which shows that motivation is considered a powerful factor in learning - *provided the basic prerequisites for learning to take place are present.* This aspect has been neglected by many foreign language learning researchers. It would thus be safer to claim that, *other things being equal,* high motivation is likely to improve the learning outcome.

Some of the problems connected with motivation arise because there is no general agreement about what motivation really is, and that it can only be measured indirectly. In educational psychology what is called *achievement* motivation, the need to succeed, to be good at something, generally gets a lot of attention (see e.g. Gage & Berliner 1988). In a foreign language learning context, motivation has usually been talked about in terms of *integrative* and *instrumental* motivation (Gardner & Lambert 1972; Gardner 1985). A learner who possesses integrative motivation has a genuine interest in speakers of the target language and the language itself, while a learner with instrumental motivation is more interested in how the language can be useful in trying to attain other goals.

The strongest advocates for the importance of motivation in second language learning are Gardner and Lambert and their associates. According to their long-time studies (1959-1985), strong motivation is significant for successful second language

learning. In their earliest studies Gardner and Lambert (1972) claimed that integrative motivation gave better results in second language learning. Later they re-evaluated their findings, maintaining that strong motivation is necessary for successful second language learning, but the type of motivation will vary with the cultural setting.

All researchers do not, however, use Gardner and Lambert's terms when discussing motivation and foreign language learning. It is easy to claim that a learner will be successful with a proper motivation. These claims do not, however, tell us what the subcomponents of motivation are. A number of factors can be included in motivation. According to McDonough (1981), one must distinguish at least between seven factors in foreign language learning motivation, and the origin of any of them for any particular learner may well be different from that of other learners. McDonough's list shows that the distinction between instrumental and integral motivation is far from clear:

(1) energy
(2) willingness to learn
(3) perseverance
(4) interest
(5) enjoyment of lessons
(6) incentives
(7) benefits of knowing the language

Only a few factors of motivation are under the teacher's control. Interest may be original to the student but may also be related to parental encouragement or the teaching method or the teacher as a personality. It may also have arisen from visits to foreign countries or via friends, television programs, etc. The effectiveness of any activities in the foreign language classroom must also depend on different learner characteristics, the learning situation, and the goals of the learner. Clement and Kruidenier (1983) identified four main factors among Canadian students studying English or French as a second language. These four factors were shared by all groups of learners:

(1) pragmatic goals
(2) travel
(3) seeking new friendships
(4) acquiring knowledge.

Which comes first?

Motivation can only be measured indirectly either by watching a learning situation, or on the basis of questionnaires and interviews. In addition, there is still no general agreement on what motivation in foreign language learning consists of. Yet by far the biggest problem concerning motivation is that we do not know for certain whether it is successful learning that enhances motivation, or motivation that produces successful learning. The complicated nature of motivation in foreign language learning has been stressed and discussed in Finland by A-L. Leino as early as 1974. She found only a weak relation between motivation and foreign language learning. Leino also warns of making causal conclusions about the relationship.

One would expect that in a modern TV society practically everybody would be motivated to learn at least one foreign language. Every year hundreds of teachers in Finland start teaching English to tens of thousands of eager young learners. After a few

months the picture is not the same any more: there are some pupils in most classes who are making little progress and gradually seem to lose interest in the new language.

Most of the studies in different countries have been made after or in the middle of courses in foreign languages, or even after several years of studies in the target language. The conclusion generally drawn is that high motivation results in high achievement (e.g. Gardner & Lambert 1959, 1972; Gardner 1979; Lukmani 1972; Savignon 1972; Schumann 1975, 1976; Gardner & Smythe 1975; Gardner & al.1976; Brown 1973; Oller & al. 1977). In Finland Laine (1978) found that motivational factors, foreign language aptitude, and general intelligence made equally large contributions in predicting foreign language achievement. At the time of the investigation the students had studied English for 7 years. Burstall (1975) and MacNamara (1973) conclude that achievement creates motivation. A critical standpoint is also taken by Oller and Perkins (1978), Oller (1981), McDonough (1981) and Ellis (1985). They all warn against making causal inferences on the basis of questionnaires answered in the middle of courses of instruction.

Summary and conclusions

The following can be said to summarize the evidence given by studies concerning motivation and foreign language learning (Kristiansen 1990, 21):

- We do not know for sure what motivation is in foreign language learning; the concept is defined differently by different researchers.
- If we accept the main definition given by psychologists (as most researchers do) that the motive shows the strength of a tendency to action, then it follows that the teacher has at least some possibility to strengthen the motivation by pedagogical devices.
- Motivation is, however, a complex cluster of factors, and all of these cannot be manipulated by the teacher. In some factors parents, peers and mass media have a role.
- Motivation has not been shown to be a *cause* of learning.
- The existing correlational studies between motivation and achievement do show a relationship. At present we do not know for sure whether high motivation always produces good learning, or whether good learning outcome creates motivation to learn more. It is not possible to make causal inferences between motivation and achievement on the basis of studies performed in the middle of or at the end of foreign language instruction. This is, however, what has been done in most studies.
- Only longitudinal studies, started when foreign language learning begins, can give an acceptable answer.

6.2. Attitudes

Foreign language learners vary considerably in their attitude to the language they are studying and to the people who speak this language. The learner's attitude towards the target language and its speakers is supposed to influence his study motivation, making motivation and attitude closely connected.

The problems of defining attitudes, as well as motivation, are considerable. Especially concerning attitudes to the target language there is no general agreement about the meaning of the concept. According to Gardner and Lambert (1972), motivation is the learner's overall goal or orientation, attitude again is defined as the persistence shown by the learner in striving for a goal. In the earlier studies they (1972) claimed that attitude and motivation need not be related to each other. Later Gardner (1979) suggests that attitudes can serve as supports of the learner's overall orientation.

With extensive studies, Gardner and Lambert attempted to examine the effect of attitudes on foreign language learning. After studying the relationship of a number of different types of attitudes and language achievement, they concluded that feelings, attitudes and beliefs have a greater influence than language aptitude and intelligence both on the rate and ultimate level of achievement in second language learning (Gardner & Lambert 1959, 1965, 1972; Gardner & al. 1976; Gardner 1979). These results, however, mainly concern investigations undertaken in the target language country - the students are trying to learn the language of the country where they live. This kind of research cannot be directly compared with research on children studying a foreign language at school.

Some researchers (Plowden 1967; Pringle 1980), when giving a survey of parental attitudes, strongly stress how the poor or slow learner is not necessarily 'less able', but the family background may simply be socially disadvantaged. Oral foreign language skills thrive on travel, on home-to-home exchanges, foreign friends. These are ruled out for many children by parental circumstances. The same applies to 'adult time' in the critical age for language development in general: before five years. A child also needs a parent who can offer a model for curiosity and discoveries of the world around (Hawkins 1983, 103). Parents who are interested in foreign languages encourage their children to study them. Yet it is not always so that parents' active pressure on the child gives the expected attitude and result, but the opportunities they can offer their children do. This is reflected in the linear correlation found between progress in foreign language learning and the status of parental occupation (e.g. Burstall 1975; Hawkins 1983).

More research is needed about the attitudes of poor and good foreign language learners' parents to the target language. According to Gardner (1979, 108-123) it is clear that the parents do have an influence on children's attitudes and motivation and thus play a role in the development of proficiency in the second language. The assumption seems reasonable. In general, attitudes develop early in childhood and may easily be a result of the influence of parents and peers.

Researchers in different countries seem to agree about motivation and attitudes in the sense that they are considered to be important factors in foreign language learning. It is, however, difficult to distinguish clearly between attitudes and motivation. Neither of these can be directly observed but has to be inferred from what a learner actually does. The information received is based on self-reports, and this seems to be an unavoidable weakness. The result of questionnaires depends on the attitudes of the reporter towards the questions concerning attitudes. And again, as with motivation, comes the question: What follows what? What is effect and what is cause - attitude or learning outcome? Or need there be any causal relationship at all? Or do they influence each other? The attitude and motivation measures are usually administered simultaneously with the proficiency measures. The relationship is, however, according to Oller and Perkins (1978a), often presented as seen in Figure 4.

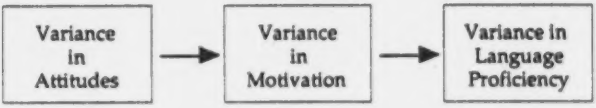

Figure 4. A frequently presented hypothesis about foreign language proficiency and attitude/motivation.

Burstall (1975) found that achievement affected later attitudes and later achievement to a greater extent than early attitudes affected either later achievement or later attitudes. A similar view is taken in several studies among others by Chihara and Oller (1978); Oller and Perkins (1978a, 1978b, 1978c); Oller and Hinofotis (1980) and Oller (1979, 1981). High achievers tend to develop positive attitudes as they go along, and low achievers less favourable attitudes. This was clearly shown in Savignon's study about college students studying French (1972). Students who indicated more positive attitudes at the beginning of a course in French as a foreign language at the University of Illinois did not attain higher levels of achievement in the language, but when the learners were tested at the end of the course those who had attained higher levels of achievement also expressed more positive attitudes at the end of the course. An alternative to the usual assumption about the direction of causation of attitude/ motivation is presented by Oller and Perkins (1978a, 95):

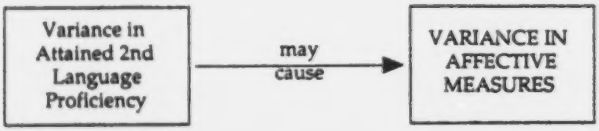

Figure 5. An alternative hypothesis about causation between affective variables and foreign language proficiency.

If we think of young school children at the beginning of their foreign language studies at the age of 8 or 9, the possibility presented in Figure 5 must be taken seriously. Any teacher of English as a foreign language could tell us about positive attitudes of children to the 'new' language at the beginning of the studies, at least so in a country like Finland where videos and TV-programs in English are watched daily, and pop idols equally listened to. At the beginning of the second year's studies - and even earlier - the picture one gets of pupils' eagerness is already completely different. This can also be seen in the class grades given to the pupils, and during the first year the attitudes to the foreign language already tend to become more negative among the poor performers than among the others (Sarmavuori 1983).

Attitude measures are all necessarily indirect measures. Oller raises the general question of what existing foreign language attitude and motivation batteries really measure. He repeatedly suggests that the items of the questionnaires may assess language proficiency. The same viewpoint is taken by Perkins (Oller 1979, 1981; Oller & Perkins 1978a, 1978b, 1978c). The same possibility has often entered the present writer's mind while studying questionnaires - especially those answered by poor performers. There are big differences in text understanding among the pupils in an ordinary elementary school class (e.g. Laurinen 1985; Sarmavuori 1985, 1987; Vähäpassi 1987; Brunell 1988; Matilainen 1989). If the questions or alternatives offered are very numerous, the problem becomes even more serious. First, do all the pupils understand the questions of alternatives properly? Second, do they care to read the long text carefully enough if being poor in text understanding? If written answers are asked for, do they care to write properly? Those who are poor in their mother tongue have problems both in text understanding and production. One cannot exclude the possibility that the items in attitude and motivation test batteries to some extent measure language ability. This possibility is also supported by Tucker (1981).

Measurement of attitudes, through the use of questionnaires, is also thoroughly discussed by Hamilton (1983, 143-159). To him questionnaires represent problem solving tasks. Individual differences implicate not only the obvious role of prior stimulus experience, but even strategies of conceptual stereotyping. In order to solve the problems presented by the questionnaires the subjects must draw on conceptual structures that are developmentally determined, for instance such as (1) the degree of informational redundancy contained in each item, (2) the subject's willingness to label the stimuli with certainty, and (3) the care with which the subject analyzes the stimuli and selects the response.

According to Hamilton, the evidence of individual differences obtained by using questionnaires implicates both the role of prior stimulus experience and strategies of conceptual stereotyping. Hamilton's view is that free-response self-descriptions are probably superior to the usual attitudinal questionnaires in both reliability and validity. It can be added that this kind of measures should be taken both at the beginning and end of the foreign language studies in order to give reliable information about possible causal effects. It may even be that there is no way to determine whether attitudes are/ can be a cause of foreign language learning.

6.3. A conclusive view of motivation and attitudes

Motivation and attitudes have been given quite a lot of attention here as they have commonly been considered to be among the most important factors influencing foreign language learning. It is the *causal* aspect that interests most in a study of how the poorest performers could be made to learn more. If we can find out something that leads to learning, then that something could be used to improve the learning outcomes.

The main drawback from this point of view in most motivational/attitudinal research is that either the population or the learning environment differs considerably from Finnish conditions. In the present research, the interest is on young elementary school pupils in ordinary classes where 100 % of the pupils must try to learn foreign languages, and in an environment where they do not mix daily with a lot of people speaking the target language.

The subjects in motivation/attitude research have often been grown-up people, even college students, attending a voluntary course in the target language. In these circumstances it is very much possible that attitudes and motivation are excellent predictors of foreign language learning. All students - if they are attending a voluntary course - are naturally at least moderately motivated, either integratively or instrumentally. In addition, in the case of *college students* all the subjects *must necessarily meet all the cognitive prerequisites needed for fairly good language learning*. As college students they have already shown their ability to learn theoretical subjects. There is every reason to expect that among educated people motivation plays a crucial role in language learning - whether the second, third or fourth language. The command of one's native language among non-academics, however, differs considerably from one person to another. Some of them are genuinely interested in languages, some are not. It has taken a long time for interest and ability to develop.

According to child language psychologists, even the time before birth might influence language development, and the very first sounds of a baby are nowadays considered to be attempts to communicate. How the grown-ups react to those stimuli certainly differs considerably. Parents differ in the amount of verbal training they give their children.

Practically all research done about attitude/motivation and foreign language learning is done without any simultaneous attempt to find out the person's command of his mother tongue. In Finland Sarmavuori (1983) found that the grade given in mother tongue explained 62 % (boys) and 69 % (girls) of the grades given in foreign languages after the first year of study. It is possible that the native language might be at least as good a predictor of second language learning as attitudes and motivation.

The evidence of variability in language abilities among natives should not be overlooked when studying additional language learning. Finally, if attitude differences are of crucial importance, how can we explain that all children learn their native language, and most immigrant children another language within a reasonably short time of residence in the new country?

6.4. Some additional affective factors

In foreign language learning research there has been an increasing awareness of the necessity to study the human personality from as many aspects as possible. The study of the whole personality has come more and more into focus. Many other factors than motivation and attitudes are considered to be affective. There are, however, difficulties in categorizing certain personality factors. Abstract concepts are elusive in nature and difficult to define operationally. Standardized psychological tests of extroversion/introversion, empathy, and aggression are under constant revision, which can be seen as evidence of an ongoing struggle for validity.

There is little research about personality traits and foreign language learning. It is possible that personality traits such as extroversion and empathy are helpful in oral foreign language proficiency. Effective communication requires understanding of the other person's affective and cognitive state. Yet it might be so that extrovert people simply talk more. Therefore, showing empathy need not be synonymous with being emphatic.

The same applies to extroversion/introversion. An extrovert person is often considered to be emphatic as well. Yet a person may behave in a way which is interpreted as extrovert, but the real cause might be that he wants to protect his inner feelings, he might have high ego boundaries. According to Naiman et al. (1978), empathy and extroversion did not relate significantly to foreign language learning. They also express a doubt about the construct validity of personality measures: pupils who according to the investigators were shy and introvert in the classroom did not score differently from those reported to be extrovert and who acted accordingly. In Finland Konttinen (1970) found a relationship between introversion and passive foreign language command among grown-up students.

Affective factors have also been strongly emphasized by Dulay, Burt and Krashen in several studies (e.g. Dulay & al. 1982; Krashen 1982, 1985). The concept of an Affective Filter was originally suggested by Dulay and Burt in 1977, and has since been developed into the Affective Filter hypothesis. By Affective Filter is meant a mental block, caused by affective factors:

- high anxiety
- low self-esteem
- low motivation.

This mental block prevents acquirers from fully utilizing the comprehensible input they receive for language acquisition (Krashen 1985, 100). The filter is lowest when the acquirer is so involved in the message that he temporarily forgets he is hearing or reading another language.

The importance of self-confidence and a good self-image in second language acquisition is stressed for instance by Krashen (1982, 31). Oller et al. (1977, 14) found when studying Chinese-speaking ESL-learners that the more positive a subject's self-concept, the higher the subject's achievement in English. Similar findings are also reported by Naiman et al. (1978).

The role of motivation in foreign language learning has been stressed by innumerous researchers, while the role of positive self-image has not been that widely dealt with. Yet, it may play an even greater role in the foreign language learning of poor performers, for the following reason: foreign language studies usually start after several years at school. If a poor learner by that time has developed a poor self-image after repeated failures in theoretical subjects, this might affect his learning. In a mixed ability group the individual differences start emerging very soon.

The importance of self-esteem in foreign language learning is stressed by Gardner and Lambert (1972), Chastain (1976), and Brown (1980). Self-esteem is derived from the accumulation of experiences with oneself and with others. It is possible to talk about different kinds of self-esteem. Brown (1980, 1987) distinguishes between three levels of self-esteem, the first being *global* self-esteem. This is thought to be relatively stable in adults. The second level is called *situational* or *specific* self-esteem. This refers to one's appreciation of oneself in certain situations, such as school, work, home, communicative activity, etc. The third level relates to particular tasks within specific situations and is called *task* self-esteem. Research about self-esteem and learning fails, however, to answer a crucial question: *Which comes first, success in learning or self-esteem?*

It is extremely difficult to make any causal conclusions about the relationship between self-esteem and foreign language learning. A pupil may, however, easily develop a poor self-image when trying to learn a foreign language without success. Here we might talk about *subject-related* self-esteem.

In this connection, Carl Rogers's psychoanalytic theory has important implications. According to Rogers (1951), one of the best ways to facilitate the learning process is to establish an interpersonal relationship with the learner. Especially for poor performers it could be assumed that learning would benefit from the warmth and acceptance of others. If these are lacking, the experiences of poor performers may be distorted into behavioral problems to avoid any discomfort the failure may have caused.

Rogers's contribution to understanding learning from this perspective can hardly be overemphasized. His thinking is also focused on learning instead of teaching: learning to learn is more important than being taught something. According to Rogers, the teacher must first of all be real and genuine, discarding masks of superiority and omniscience. Secondly, the teacher needs to trust, accept and appraise the pupil as a worthy, valuable individual; and last, the teacher needs to communicate openly and emphatically with his pupils and vice versa.

What is needed are real facilitators of learning, and according to Rogers one can only facilitate by establishing an interpersonal relationship with the learner. Given a *nonthreatening environment*, a fully functioning person will form a congruent picture of reality, will grow and learn, and be able to see his own potentials. Rogers has been attacked by some traditional theorists for being too idealistic. His definition of self-esteem, however, very clearly emphasizes the *importance of realizing one's real capacities and possibilities*.

Among researchers in foreign language learning Chastain (1976) belongs to those who strongly stress the importance of the self-image. He draws attention to the fact that a weak self-image in the native language becomes uncomfortably fragile in the

second-language class. For this reason foreign language teachers should be more sensitive to self-concept and to its effects on the students and their work in class than mother tongue teachers. The teachers should consider what they expect of their students and how they correct students' errors. They should try to establish a supportive, encouraging atmosphere for second-language acquisition (p. 250-51).

According to Leontiev (1981), *the foreign language teacher needs, more than teachers of other subjects, to get actively involved in the emotional atmosphere of the lessons* and do his best to encourage and develop emotional states that will improve the learning activity of the students (p. 72). There is every reason to believe that the emotional atmosphere in the learning situation is even more important for poor performers than for others. When we look deeper into the problems of learning, we soon face the question: what is affective, what is cognitive? Affective factors do not function on their own.

7. Interaction of the cognitive and the affective domain

When dealing with affective factors in foreign language learning, generally only attitudes, motivation and anxiety have been given special attention. In addition, they have usually been discussed separately from cognition. Yet *any description of affective processing must necessarily remain incomplete until interactions between affect and cognition are taken into consideration.* In other words, it is clear that cognitive and affective processes are interwoven.

Some researchers are very critical to the dominance of affective factors in personality research, among them Royce and Powell (1983) and Hamilton (1983). Unfortunately, research on 'thought' and 'feeling' have progressed relatively independent of each other. Comparatively *little has been written about the relationship between cognition and affect* - although it must be considered central to a variety of psychological phenomena. This relationship has been given great importance by Royce and Powell in their Theory of Personality and Individual Differences (1983). They strongly claim that affects are often a result of learning. They point out how various aspects of affectivity have clearly been influenced by conditioning. As examples of this they mention culturally conditioned fears, such as the fear of snakes or a generalized fear of the dark.

Royce and Powell give the following definition of cognition-affect interaction and emotion: emotions are differentially patterned states of cognition and affect that involve specifiable deviations from the steady state of the total psychological and physiological system (p. 182-183). Different subsets of cognitive and affective factors combine to account for different emotional states of organism. *Individual differences in emotion are seen as products of the interaction between the cognitive and affective systems.* Also, according to Royce and Powell (p. 259), cognition and affect form the transformational or learning-adaptive level of overall personality, maintaining cognitive-affective balance in one's adaptations to the environment.

At the highest level of personality are, according to Royce and Powell, styles and values, expressing commitments to modes of processing, and to the selection of particular contents, respectively. Cognitive values are psychological interests that direct, coordinate, and evoke cognitive activities in the pursuit of high level goals. Such interests direct cognition towards processing activities that are consistent with the individual's goals. *Interests* as well as *needs* are dominated by three value orientations of intrinsic, self, and social (p. 150). It is possible that these factors explain more about poor performance than the concepts of attitude and motivation. The strength of Royce and Powell's theory from the point of view of learning difficulties certainly lies partly in the fact that their theory of personality gives a combined interpretation of affect and cognition, and to a great extent also deals with individual differences.

Along similar lines the British psychologist Vernon Hamilton (1983) argues convincingly that what has been called the 'affective domain' is in fact cognitive, as are all mental processes according to him. *An affective state cannot be known to the individual unless that state is conceptually established and symbolically labeled.* Emotions, like cognitive concepts, must be understood as concepts, and must have words attached to the feelings. *Affects must thus have a representation in cognitive structures.* As an example he asks the following question: 'How, for example, are we able to say that tomorrow we may be feeling anxious or depressed, because a bill for a large amount is likely to arrive by post? The anticipation here concerns a future event, and cognitively expecting a feeling cannot be due to physiological events which have not yet occurred' (p. 137).

Hamilton does not deny that feelings or affective preferences have some distinctive somato-sensory characteristics. Yet, according to him, an adult emotional response is always a cognitive response whatever its physiological or neurochemical concomitants. To be aware that we 'like' an event, as well as to be able to report it can only mean that conceptual classifying processes have taken place. This again must mean that emotional, affective feeling tones are in themselves cognitive data. The availability and utilization of such informational data is evidence and a reflection of cognitive operations and processes on cognitively labeled affect structures. Hamilton argues that non-cognitive concepts of personality and motivation are substantially based on early scientific paradigms, and are descriptive rather than explanatory.

Similarly, Hamilton claims that anxiety interferes with permanent memory selection processes. This produces an excessively high load on the processing capacity and causes reduction in performance levels and speed of performance. Hamilton cites several extensive studies, in addition to his own, in support of the view that the factors determining intelligent cognitive performance are the same as those facilitating personality and motivational differentiation.

Low self-esteem is explained by Hamilton in the following way: a self-concept of competence results from carrying out tasks assigned by others. Task performance occurs against an expected result and criteria of adequacy. A high discrepancy between criteria of adequacy and evaluation of performance is likely to result in low self-esteem. Experience of 'inferior' has then occurred in frequent numbers of contexts, and has become a principal cognitive structure, or a superordinate schema. This

development explains how a pupil 'learns' he is a poor foreign language learner, and gradually gives up even trying to learn.

It can be concluded that too often in foreign language learning research either the affective or the cognitive aspect has got very little attention, or they have been dealt with independently of each other. It is hardly possible to prove that poor learning outcomes for ordinary elementary school children would be a result of only cognitive or only affective factors. It seems more probable that the explanation must be looked for in the *interaction of the cognitive and affective domains* - if two completely different domains exist at all.

8. Cognitive factors in foreign language learning

8.1. The role of reasoning ability

All school children have already acquired one language - their mother tongue. Therefore, researchers have taken it more or less for granted that foreign language learning is unrelated to intelligence. Large scale empirical experiments have not seemed necessary. Most researchers refer to Lenneberg (1967) who showed that all children, except very severely mentally retarded, develop grammatical competence in their mother tongue. This does not mean at all that all children learn to master their mother tongue equally well. Language learning processes depend on existing cognitive structures. If they do not develop well enough, they will limit the language proficiency of a child.

Foreign language learning is an active process. The learner has to discover how the input is segmented, how the segments are used to represent meaning, how units are assembled structurally, and what principles are used to achieve communicative goals. This process presupposes a host of cognitive strategies and skills, including procedures for selecting appropriate vocabulary, grammatical rules, and other conventions governing the language use. Can this complex process be totally independent of intelligence?

The concept of intelligence is defined differently by different researchers. Intelligence is the abstract and hypothetical measurement construct which has been used to measure general levels of cognitive functioning. A broad definition by Sternberg and Salter (1982) and Hamilton (1983) is shared by many other investigators: intelligence is expressed in terms of adaptive, goal-directed behavior.

In addition, more and more researchers relate culture and language closely to cognition, strongly stressing the close relationship between language ability and intelligence test results, and to intellectual functioning in general as well (e.g. Vygotsky 1962, 1978; Jensen 1969, 1980; Olson & Torrance 1983; Sarmavuori 1983; Carroll 1982,1985).

Traditional intelligence tests may be verbal or nonverbal, or a combination of both. In any case, reasoning is needed, excluding some general knowledge and information

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items. To master one´s own language one must be able to learn, to remember, and to use rules. For this, reasoning is required.

A weakly developed ability to understand rules in one's mother tongue has also been found to be related to poor reading ability. (For a review, see e.g. Manis & al. 1987.) One might presume that reasoning is even more important for learning a foreign language. If there is a close relationship between language learning and reasoning ability, this might be of value when planning remedial instruction. It does not help us to know that some pupils are poor foreign language learners unless we also find out what mental processes have not developed equally well in poor and good learners.

As for the so called general intelligence, vocabulary learning has often been found to be an excellent measure of it (e.g. Eysenck 1979; Jensen 1980; Sternberg & Powell 1983). Vocabulary learning is also connected with learning from texts. It has been shown (e.g. Björklund & Bernholz 1986) that cognitive differences between good and poor readers are related to differences in their semantic memories.

Reasoning is important not only for learning grammar but also for vocabulary learning. The acquisition of word meanings is highly dependent on the deduction of meaning from the contexts in which the words are encountered (e.g. Jensen 1980; Anderson & Freebody 1981; Sternberg & Powell 1983; Sternberg 1985a, 1985b, 1987; Beck, McKeown & Omanson 1987; Curtis 1987; Marzano & Marzano 1988; Schouten-van Parreren 1989).

In an extensive study about the English vocabulary of Finnish school children Takala (1984a) found that the fastest learners had a vocabulary that was many times as big as that of the slowest learners. Similar results in highly different cultural settings have been reported by Kristiansen (1990). The findings lend support to the importance of reasoning ability in foreign language learning. Marshalek's results (1981) are of special interest in this context. According to him, it was very difficult for subjects with low reasoning ability to infer the meanings of words. A certain level of reasoning ability may be needed to understand words, and especially to extract word meanings.

This could mean that in foreign language learning it would be possible for the poorest learners to acquire a fairly concrete vocabulary consisting of high frequency words in everyday speech, but probably not a very abstract vocabulary. Poor performers might learn to discuss simple everyday matters in a foreign language, but not to understand or produce infrequent, highly abstract words and complicated grammar.

As early as 1972 and 1974 Anna-Liisa Leino studied empirically the relationship between verbal reasoning and foreign language learning. She investigated the personality and intelligence variables related to the English school achievement of high school students (N=64). She found (1972) that verbal reasoning was the best predictor among the intelligence variables. This was confirmed later (1974), even when motivation was included among the predictors in the study.

Experiments by Genesee & Hamayan (1980), Flahive (1980), and d´Anglejan & Renaud (1985) have given further support to reasoning as an important factor in formal foreign language learning. They all employed Raven´s Progressive Matrices Standard form (SPM) to measure reasoning ability, in addition to ordinary foreign language test batteries. The high correlations found by the researchers indicated a strong relation-

ship between foreign language learning and reasoning ability. As reasons for using Raven´s test the researchers mention its validity and reliability in a wide variety of non-English speaking settings. They also emphasize that it is completely language-free. As a measure of nonverbal intelligence it has become popular all over the world. The test requires reasoning without any verbal material. According to Raven et al. (1983), it is a test of a person´s capacity to understand relations, make comparisons, reason by analogy, and, by doing so, develop a systematic method of reasoning. Raven stresses that it is a mistake to describe it as a test of 'general intelligence', as has often been done.

Like all complex cognitive skills, foreign language learning involves gradual integration of subskills. It requires the assessment and coordination of information from a multitude of sources. The same ability to organize and reason is also needed to score high on Raven´s test. Therefore, it is not surprising that a coherent picture emerges from the research that has employed the Raven Progressive Matrices test - a clear relationship between inductive and analytical reasoning and foreign language learning.

In addition to the research mentioned above, support can be found in studies in Finnish elementary schools (Patjas 1976, Koivumäki 1979, 1980). Patjas-Koivumäki found that the best predictor of grades given by the teachers, not only in foreign languages but even in some other subjects, was nonverbal intelligence/reasoning measured by Raven´s test. She studied pupils in grade 4, age group 10-11 (554 girls, 567 boys). Her results suggest that school children differ in their foreign language as well as in their reasoning abilities at a very early stage.

Similar findings have been reported by Kristiansen (1990). In a comparative study of pupils in Helsinki and Delhi (N=768, age group 12-13). A clear relationship was found between reasoning ability, as measured by Raven´s test, and foreign language learning outcomes. It may be of interest to note that the production scores were lower than the comprehension scores (p. 121). This has also been indicated in some other studies (e.g. McLaughlin 1978, 1987).

A natural explanation of scoring higher in comprehension than in production can be that the production process requires much more cognitive energy, and an efficient mode of sentence processing. Successful production strategies involve planning strategies and monitoring. Many learners, and poor performers especially, rely on simplification and the omission of form words and affixes. These learners, who are mostly unable to cope successfully with the simpler processes needed to understand a foreign language text based on the grammar and vocabulary taught, may be expected to be even more handicapped in the production process, due to its increased complexity. On the other hand, reasoning in terms of making inferences is highly needed when trying to understand foreign language speech containing several unfamiliar words. It seems fairly clear that verbal as well as nonverbal reasoning ability is closely related to a person´s ability to learn foreign languages.

8.2. Practical and social intelligence

Nonverbal reasoning tests have been found to show greater differences between members of different sociocultural groups than do the verbal tests they were designed to replace (Jensen 1980; Sternberg 1982). The nonverbal tests are not, contrary to the claims that have often been made for them, culture-free nor culture-fair. Children whose environments have been characterized by deprivation of one kind or another are handicapped on these kinds of tests. In the same way they are handicapped when learning academic skills, for instance foreign languages in formal school settings. The tests discussed may thus be unfair and even deceptive for between-group comparisons. All children have not had the same opportunities to develop their language, nor their reasoning ability. It may be that partly for this reason some children are not able to make proper progress in foreign language learning, at least when the teaching is given in an academic, grammar-centered way. As discussed earlier, all children do not profit equally from all kinds of instruction.

As Sternberg (1985a, 312) points out, intelligence comprises somewhat different skills for different people, and there is no single, wholly appropriate test of it. Which instruments work best for which people vary within and between sociocultural groups. In addition, intelligence tests as they now exist, must be considered imperfect as predictors of intelligent behavior in the real world.

The recent interest in *other* kinds than academic intelligence may be of great value when teaching foreign languages to so-called poor and slow learners. If these pupils are inferior to their classmates in verbal abilities, they may still possess some abilities that *are helpful at least in verbal oral communication*. In that case these skills should be made use of in learning situations.

One such skill is what is generally called *social intelligence* or *social competence*. Social intelligence can be viewed as a subset of *practical intelligence*. The two sets of abilities can, however, be considered separate because they both historically and theoretically seem to deal with a somewhat different set of abilities (Sternberg 1985a). It has been found that both academic and social behavior can be measured with a high degree of reliability in different cultural groups.

Researchers in practical intelligence try to describe some of the complexities of intelligent performance in natural settings. It is by now clear that academic and nonacademic intelligence can be distinguished empirically (see e.g. Mercer & al. 1986). This finding supports the conceptual distinction between the two kinds of intelligence. The findings have also been replicated in diverse populations.

The *correlations between the academic and nonacademic tests are all low in cases where language-free tests have been employed* (e.g. Neisser 1976; Wagner & Sternberg 1986; Sternberg 1985a, 1986; Berry & Irvine 1986; Ceci & Liker 1986; Gardner 1983; Scribner 1986; Mercer & al. 1986; Willis & Schaie 1986). As soon as language comprehension and reasoning are included, the results are highly related to traditional intelligence tests.

Willis and Schaie (1986) showed how the performance on the Basic Skills Test, a paper-and pencil-approach to measuring practical intelligence, primarily depended on

fluid reasoning ability. The best predictor for such basic everyday skills as understanding *labels, maps, charts*, and *ads* was reasoning ability (p. 248).

There is plenty of evidence by now that practical know-how can be found throughout the peoples of the world, including peoples who have been viewed by western cultures as savages (for a review see e.g. Berry & Irvine 1986). It has also been repeatedly found that there are differences between the *expert* and the *nonexpert* or *novice* groups, unrelated to general intelligence and unrelated to age (e.g. Streufert & Streufert 1978; Chi & al. 1982; Rossi & Nock 1982; Scribner 1984, 1986; Wagner & Sternberg 1986; Klemp & McClelland 1986).

The investigation of the performance of experts and novices shows that what seems to be critical is not solely the amount of experience but rather *what one has been able to learn from that experience. Difference in the quantity of experiences are not perfectly correlated with levels of expertise.* Every human being has had some kinds of experience. It is of importance to try to identify the maximum potential of each individual showing deficiences in general verbal abilities. The most critical need in ability testing today is to develop measures sensitive to real-world kinds of intelligence. These tests would give information about what a person can do, not only reveal what he is doing poorly.

Scribner (1986) suggests that there are different kinds of thinking and that it is useful to distinguish between them: *theoretical thinking* and *practical thinking*. Practical thinking serves to achieve the goals of everyday activities in which one engages. Scribner has found how ordinary workers use fairly sophisticated methods of problem solving to accomplish their goals and also employ different kinds of practical reasoning. Ceci and Liker (1986) have found how racetrack handicapping ability, although being very complex, is quite distinct from the abilities involved in academic intelligence. People with even less than normal academic intelligence quotients can perform the tasks of handicapping in a highly effective and successful way.

The ecological validity of the tasks in many kinds of testing has become more and more a field of investigation. It is possible that our school system does not tap all relevant abilities in real-world situations, and the same may be true of intelligence tests. Sternberg (1985a, 310-311) describes a situation where a psychologist visited a school for the mentally retarded in order to measure the pupils' intelligence with the Porteus Maze Test. The psychologist arrived just as the students executed a successful escape from the school's restricted grounds. After they had finally been caught, they took the test. It turned out that the very persons who had plotted and executed the fairly successful escape were unable to complete even the first problem of the test. This fact left the psychologist to figure out which was the best measure of intelligence: the test or the planning and execution of the escape!

In the research on practical intelligence Sternberg (1982, 1985a, 1985b) and Wagner and Sternberg (1986) have investigated the role of *tacit knowledge* (knowledge that is usually not openly expressed or stated), in professional expertise. They claim that much of the learning that matters to success in real-world pursuits happens in the absence of formal instruction and is tacit knowledge. Wagner and Sternberg especially wanted to concentrate on aspects the traditional IQ tests have neglected: differences

in practical knowledge between *experts* and *novices* in the domains of academic psychology and business management. They found that the *key element of practical intelligence in occupational settings is the ability to learn and then apply information that is never explicitly taught to workers but is essential for success in their jobs.* This generally non-verbalized tacit knowledge enables workers to meet the often unwritten and unspoken demands of their jobs. Tacit knowledge deals with the management of self, tasks, and others.

Experts and novices were found, among other things, to differ in their tacit knowledge. The most important thing considering academic learning is that it was found that *people high in academic intelligence do not necessarily fare well in acquired real-world tacit knowledge and vice versa.* Again, the results indicate that academic success at school and in theoretical studies do not necessarily lead to a successful career. An important question arises: how could tacit knowledge be taught?

Adaptive behavior is defined by Mercer et al. (1986) as the child's social role performance in a variety of social systems as evaluated by others in those systems. A social-behavioral approach focuses on the individual's ability to deal with the external world of social structures and interactions, and his ability to play a variety of roles in various social systems. Mercer et al. have defined six different kinds of roles that need to be taken into account in the analysis and measurement of adaptive behavior:

- family roles,
- community roles,
- peer roles,
- non-academic school roles,
- earner / consumer roles, and
- self-maintenance roles.

Mercer et al. have used the Adaptive Behavior Inventory for Children (ABIC) to measure social intelligence in different cultural settings and found that the *social norms for cognitive and academic performance are very different from the social norms for interacting in social groups.* According to them, 'there is no reason to expect that persons who can solve math problems or who have large vocabularies will be either more successful or less successful in their interpersonal relations than those who do not' (1986, 335). The questions in the ABIC are not answered by the examinee, but by a caretaker who knows the examinee. The performance on the ABIC is not highly related to performance on traditional intelligence tests.

Practical intelligence has been dealt with in some detail here in order to show how school teaching ignores this aspect of human behavior to a great extent, and how pupils poor in language learning easily get labeled as being unable to learn - without any other proof of it than being poor in language based learning. Research results in practical/ social intelligence should be considered when planning a curriculum for a whole age group.

8.3. Hierarchical and nonhierarchical views of abilities

Hierarchical views

In the previous chapters some evidence was given that reasoning ability is of importance in foreign language learning as well as in language learning in general. It was also seen that *communicative skills* can, at least in proper surroundings, be obtained by most students. We could speak of *different levels of achievement*. To a certain degree the same applies to mathematics. As could be expected, reasoning ability has been found to be the best explanatory variable in learning mathematics (e.g. J. Leino 1981; for cross-cultural results, see e.g. Kristiansen 1990). Leino found that a poor achiever in mathematics need not be poor in all primary mathematical abilities. A poor achiever's numerical ability and deductive reasoning can be as good as those of an average student, even if general and inductive reasoning and spatial abilities are inferior. Some students of the poor group can be above average in spatial ability and visualization, and others both in verbal and numerical abilities (Leino, 56). This supports the assumption that pupils poor in mathematics and foreign languages need not be poor in all cognitive abilities.

A learning hierarchy generally represents the prerequisites that must be available to the learner because they are incorporated in the new skill. Prerequisite relations that must be available in the form of learning hierarchies have been applied to intellectual skills of many different content types. They have also been employed successfully in programs of remedial instruction, particularly for basic skills (Willis & Schaie 1986; Gagne 1985).

If learning hierarchies are applied to foreign language learning, what should be taught to the poorest performers? The hierarchy should then probably be interpreted so that very simple communication would be at the bottom, and finely tuned grammatical analysis at the top. The existing hierarchies developed for foreign language teaching do not seem very relevant in teaching that aims at simple oral communicative skills, as must necessarily be the case with poor language learners. In addition, learning need not proceed in the manner the taxonomies suggest. Communication in the target language is according to the taxonomy of Valette and Disick (1972) a high level activity, correct intonation, correct sounds, and ability to produce simple sentences with correct grammar low level requirements. Many poor performers do not meet any of these requirements, while they may be able to communicate in the foreign language using very simple vocabulary. (For a detailed analysis and evaluation of foreign language learning taxonomies see A-L. Leino, 1979.)

As discussed earlier, matrices tests have become known as particularly good and powerful measuring instruments of mental abilities that involve the highest degree of abstraction, conceptual thinking, and problem solving. All tasks in real life, or in foreign language learning at elementary school level, do not, however, require such high level abilities. Jensen (1970) has developed a two-level theory of mental abilities. The two levels are called Level I (associative learning ability), and Level II (conceptual learning and problem solving). *Level I ability* is essentially the capacity to receive

or register stimuli, to store them, and to recognize and recall the material later. It is *characterized especially by the lack of any need of elaboration, transformation or manipulation of the input in order to arrive at the output.* Level II is characterized by transformation and manipulation of the stimulus prior to making the response. Semantic generalization and concept formation depend on this level. According to Eysenck (1979), this two-level theory has far-reaching educational effects. Discussing the theory in detail he presents a figure based on Jensen where the mental tests are arranged along the continuum going from simple to complex. A similar discussion is carried on by Entwistle (1981, 1987, 1990) who, however, stresses the possibility that analytic skills can be taught.

Both Jensen, Eysenck, and Entwistle point out that most standard intelligence tests depend heavily on Level II rather than Level I abilities. According to Jensen, *school success is highly predictable from standard intelligence tests precisely because instruction is mainly aimed at Level II abilities, yet much work depends largely on Level I abilities.* Therefore, Jensen asks for tests that will reliably assess both levels separately. This would make it possible to base instruction on a pupil's strength rather than his weaknesses. Jensen also strongly recommends research on how to utilize Level I abilities more effectively. He admits that children who are poor at both levels will face difficulties, but stresses that there are many who are poor at Level II but good at Level I abilities. According to him, traditional methods of classroom instruction invariably give these pupils difficulties. *Because they have difficulties at school they look similar to those being poor at both levels.* Yet, they might acquire Level I abilities, which does not mean only rote learning. Both Jensen and Eysenck stress that *teaching today is highly geared to conceptual modes of learning, which is suitable for children of average and superior levels of ability.* Many children with a weak conceptual ability are frustrated by schooling, and therefore learn far less than would be warranted by their good Level I learning ability.

More research is needed about which school subjects could be taught by techniques which depend mostly on Level I abilities. This aspect seems to be completely forgotten, although a variety of pupils of different ability levels have to be taught together in comprehensive schools. It is of great interest that in all studies performed by Jensen it was found that the *low and middle socio-economic status group children differed much less on Level I than on Level II tests.* Whatever the family background of the child, giving more instruction in the areas where a child's strength lies would probably help the pupil best.

To conclude, both Jensen's and Eysenck's findings of the different levels of achievement suggest that one of the faults of our educational system has been to apply methods of instruction of an academic and abstract-conceptual type on pupils who would benefit from an associative type of instruction. These results agree with findings by Genesee (1976), Genesee and Hamayan (1980) and Cummins (1979) in foreign language learning contexts.

Practical thinking serves to achieve the goals of the everyday activities one engages in. Scribner (1986) speaks of 'practical thinking' and 'theoretical thinking', the former referring to *mind in action.* Similarly, basic communicative skills in foreign languages

do not require complex inductive strategies that are a prerequisite for mastering sophisticated grammar and highly abstract vocabulary.

Nonhierarchical views

In nonhierarchical views the abilities are viewed as being independent of each other and of equal stature. Gardner's (1983) multiple intelligence framework proposes seven kinds of intelligence: musical, bodily-kinesthetic, logical-mathematical, linguistic, spatial, interpersonal, and intrapersonal. Each individual has some of each of the seven intelligences. The problem here is at what number of intelligences to stop. An individual's profile of intelligences is determined by his particular innate endowment and the history of training.

Academic intelligence can be classified as hierarchical, and practical intelligence as nonhierarchical in nature. From the language learning point of view it is of interest to observe that correlations between practical and academic intelligence are virtually nonexistent when measured on simulation tasks, and large when measured by (written) tests.

8.4. Language aptitude

The exact nature of 'language aptitude' is not known, and consequently not easy to define. It is usually defined in terms of the tests that have been constructed to measure it. A language aptitude test is supposed to measure a person's general ability to learn a language. Aptitude tests are supposed to be independent of a particular language, predicting success in the acquisition of any language.

Well known test batteries of this kind are Carroll and Sapon's Modern Language Aptitude Test, MLAT (1959; Carroll 1985), and Pimsleur's Language Aptitude Battery, PLAB (1966). On the whole, the batteries include similar tests of language abilities. In the Modern Language Aptitude Test four distinct types of second language abilities are identified (for details, see Carroll 1985, 93):

1. *Phonetic coding ability*: the ability to identify distinct sounds, to form associations between those sounds and symbols representing them, and to retain these associations.
2. *Grammatical sensitivity*: the ability to recognize the grammatical functions of words (or other linguistic elements) in sentence structures.
3. *Rote learning ability for foreign language materials*: the abilty to learn associations between foreign language words and their meanings rapidly and efficiently, and to retain these associations.
4. *Inductive language learning ability*: the ability to infer the rules governing a set of language materials, given samples of language materials that would permit such inferences.

Language aptitude correlates best with reading and grammar tests (Genesee 1976). Of the tests mentioned above, tests 2, 3 and 4 measure more or less the same abilities as intelligence tests in general. Parts 2 and 4 measure inductive reasoning, which is required in such tests as Raven's test of nonverbal intelligence. It may well be that language aptitude batteries have not brought about very much knowledge about foreign language learning, but instead have confirmed that intelligence tests and language aptitude tests to a great extent measure the ability in one's own mother tongue. Aptitude batteries have been found to be more closely related to learning outcomes in formal language learning than with communicative abilities (e.g. Brown 1980; Gardner 1980; Krashen & Terrell 1983; Littlewood 1984; Ellis 1985). The same viewpoint is taken by Krashen and Terrell (1983).

Students who appear to be highest in aptitude are those who attain high scores on all subtests. It is the total score that is generally most indicative of a student's probable success in a foreign language course, other things like motivation and quality of instruction being equal. This relationship is shown in Figure 6. The data correspond to a validity coefficient of about .51, and are based on 957 American adults studying in intensive language courses.

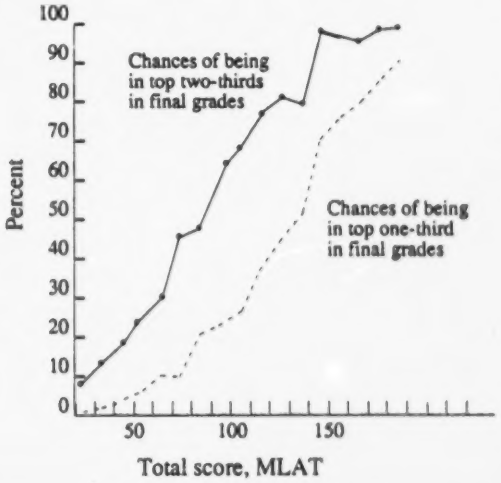


Figure 6. Expectancy chart showing an individual's chances of being in the top two-thirds or the top one-third in final grades in intensive foreign language training, as a function of total score on the Modern Language Aptitude Test (Carroll 1985, 96).

We can suppose that an examinee has a total score of 95 on the MLAT (max.=192). This student has about 68% chance of being in the top two-thirds of an intensive foreign language course but only about 23% chance of being in the top one-third of such a class. Obviously, people with very low scores have little chance of success.

In sum, in language aptitude research the components of grammatical sensitivity and inductive ability have received much more attention than the phonetic coding ability to remember words, which at a low level of performance must be considered equally important. Research evidence is accumulating about the importance of these factors in language learning (Baddeley 1981, 1986; de Groot 1983; de Soto & de Soto 1983; Call 1985; Bryant & Bradley 1985; Service 1986, 1988).

8.5. Sex differences in cognitive abilities

Literature on sex differences in cognitive abilities is filled with contradictory theories, and even emotional claims unsupported by the research done in the field. It is, however, clearly documented that there exist real sex differences with respect to some cognitive abilities. (For an extensive research review see e.g. Halpern 1986.) When measuring cognitive abilities we have to be aware that we very often use tests that also measure achievement. Sex differences have consistently been found in visual-spatial, quantitative and verbal abilities. It is not, however, possible to say whether the differences are genetic in nature or not. The largest sex differences have been found in spatial tasks, and they have also been studied most frequently. The first differences to appear have been found to be verbal in nature, frequently documented in research to exist at least from the age of 10-11 (Maccoby & Jacklin 1974; Halpern 1986). There is also some evidence that biological sex differences play a role in verbal and some other cognitive abilities, at least in some cases where learning disability was detected (Geschwind & Behan 1982; Galaburda & al. 1983; Galaburda 1984).

There is not much research evidence on sex-related differences in foreign language learning abilities. Females tend to score slightly higher than males on language aptitude tests. The differences are, however, so small that the tests cannot be said to favor either sex. There is some evidence that girls suffer less from learning difficulties in their foreign language studies, at least at elementary school level (see e.g. Kristiansen 1990). This finding does not apply only to foreign language studies but also to mother tongue learning (e.g. Dahlquist 1968; Sarmavuori 1982, 1983; Leino 1982; Lundberg 1984, 1985; Mikkelä 1985; Kääriäinen 1986; Halpern 1986; Taube 1988).

Boys have not, however, always been found to form a majority among poor text-understanders (e.g. Laurinen 1985). Lundberg again (1985) found that there is a very pronounced difference between boys and girls in language comprehension at a very low level, while in the group with a high level of language understanding there were equally many boys and girls. This might partly explain why boys generally have not been found to be inferior to girls at high levels of study.

8.6. Neuropsychology and learning disorders

Investigations into language processing have been restricted by the difficulties in studying the normal human brain. The language system is very complex, and linguistic knowledge is implicit, not explicit. The differences between good and poor readers are only in some cases due to visual perceptual discrimination differences (Laurinen 1987). Poor readers lack effective integration of semantic and syntactic cues with visual information. For dyslectic children non-words are harder to read, and long words somewhat harder than short words. Similar findings among poor performers in foreign language learning have been made by Service (1989). On the other hand, cluster analysis has failed to reveal any difference in patterns of reading performance between dyslexics and younger children of equivalent reading age (e.g. Baddeley & al. 1988).

Research on dyslectic children has taken enormous steps forward in this country as well as elsewhere in recent years. It is not, however, possible to go into details here. The reader is referred to the following comprehensive investigations, many of them containing detailed suggestions and programs for remedial treatment (Tuunainen 1977; Syvälahti 1983, 1989; Lundberg 1984, 1985; Byring 1985; Bryant & Bradley 1985; Niemi & al. 1986; Korkman 1988; Korhonen 1988).

Reasoning ability has been in the focus of several researchers. In reasoning abstract concepts are important. Abstract categorization ability has been found to be a good predictor of learning disability. Among different predictors the component of abstract category knowledge discriminated best learning disabled (LD) children from non-LD-peers. The knowledge of how members of abstract categories differ from each other was decisive.

Research evidence is getting stronger about different categories of left-handedness, and about how left-handedness in certain subtypes can affect cognitive functioning (e.g.Searlman & al. 1984). Motor impairment is connected with left-handedness caused by early left hemisphere injury (Orsini & Satz 1986). Neuropsychologic impairment is also connected with classic and common migraine (Hooker & Raskin 1986). There is enough evidence that cognitive functioning can be disturbed by neurological disorders for some children.

8.7. Conceptual Level

In this context Hunt et al. (1978) provide an index (Conceptual Level) of a person's conceptual complexities as indicated by discrimination, differentation, and integration. In addition, Conceptual Level provides increasing interpersonal maturity as indicated by self definition and self - other relations. Hunt's B-P-E model is derived from Lewin's ideas that behavior (B) is a function of person (P) and environment (E). Based on Lewin's conception of behavior Hunt proposed the B-P-E paradigm. He further proposes that the formula B = f(P,E) should be used as a paradigm, or coordinating system, for study and application of interactions (Hunt & Sullivan 1974).

GENERAL AND APPLIED STATEMENTS:

General statement: $B = f[(P)], [(E)]$

Educational point of view:

achievement of educat.objective = f [(learner)] , [(educational environment)]

This implies that the achievement of educational objectives is dependent upon the effect of the educational environment of the individual learner (Hunt & Sullivan 1974; Hunt 1975). Not only should we identify the three components, we should also understand the interaction that describes the relationship between the variables. In order to study the interactional aspect it is essential to specify the three components.

Conceptual Level Matching model (CLM model) is an example of a B-P-E paradigm. It illustrates the characteristics of the B-P-E paradigm. The concept of conceptual level (CL) can originally be found in the theory of personality development (Harvey, Hunt & Schroder 1961), according to which *conceptual level is a person characteristic as an index of cognitive complexity and interpersonal maturity.* A person at a higher conceptual level is more structurally complex, more capable of responsible actions, and more capable of adapting to changing environments than a person at a lower conceptual level (Hunt & Sullivan 1974).

People differ in their conceptual levels. Some people are more efficient in processing, discriminating, and integration processes of the brain while others have low efficiency for such processes. Naturally, the former are those who have higher CL and the latter have lower CL. Students high on CL are more flexible and creative than those low on it (Hunt & Sullivan 1974; Leino 1980). The characteristics of a B-P-E paradigm, according to Hunt and Sullivan (p. 218), are the following:

1. It should be interactive not only in coordinating person-environment interaction, but in accommodating differential behavioral effects.
2. It should view the person in developmental perspective so that the differential effects of environmental influence may be seen developmentally as well as contemporaneously.
3. It should consider person-environment interaction in reciprocal terms that view the effect of the person on the environment as well as the effect of the environment on the person.
4. It should consider practical implications of such interactions so that the conceptions can be enriched by application.

Hunt further adds that 'No one of these characteristics is entirely new, but I believe that it is essential that all should be considered, if a comprehensive understanding of person-environment interaction is to be developed.'

The conceptual level matching model applies the personality development theory in order to provide developmental and contemporaneous perspectives. In order to teach according to the stage of the students, the teacher may take into account his own contemporaneous orientation and plan an effective educational environment. However, one cannot expect overnight results from the desired changes in the environment.

From a developmental point of view the index of a pupil's growth could consist of the following dimensions:

(1) conceptual complexities
(2) interpersonal maturity.

Under ideal conditions the development is continuous but it can be considered to be a continuation of many segments. Thus if a person grows in his conceptual level, he is expected to increase in conceptual complexity and interpersonal maturity. The development of CL along the chronological age has been depicted in Figure 7.

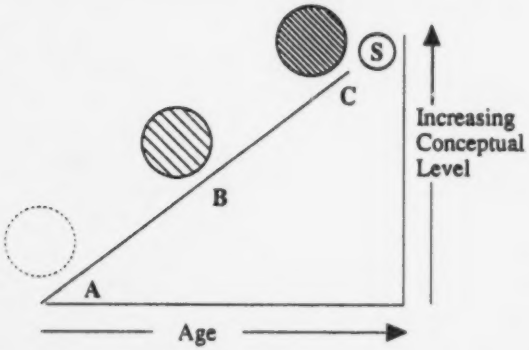


Figure 7. Development of Conceptual Level under ideal conditions. S=subject. (Hunt & Sullivan 1974, 209).

It is important to observe that people with a high CL are more effective in information processing than those who have low conceptual level (Hunt 1975; Schroder & al. 1967). A person with high conceptual level is also capable of adapting to a changing environment, and he is more stress tolerant and considerate. A high CL person (stage C) can form at least two concepts about the same elements of information. A child who has higher conceptual level than others at his own age will be able to perform tasks where complexity in information processing is involved, whereas a child with low conceptual level will not be able to perform such tasks efficiently. The complexity in information processing can vary, as can be seen from the left/right sides in Figure 8.

Interaction and contemporaneous matching

If we were interested in viewing our favourite program on television, we should have to switch on our TV set at a particular time, within the range of the relay station, at a specific channel which matches the relay wave frequency. If our set cannot match the relayed frequency, we only feel sad to miss the program due to lack of communication caused by mismatch.

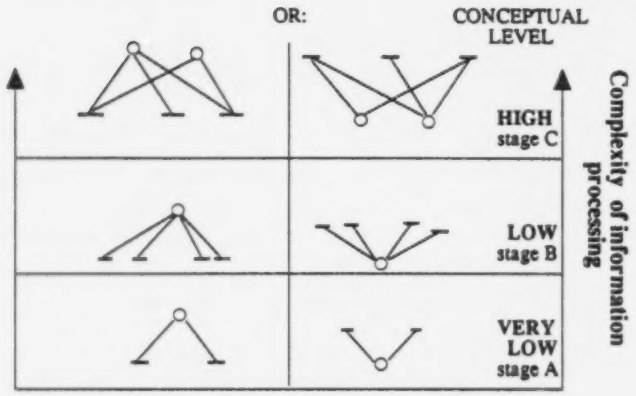


Figure 8. Contemporaneous characteristics of variation in CL (adapted from Hunt & Sullivan 1974, 212).

Figure 9 illustrates the matching concept through two extreme examples. In our schools we find that different pupils have a sort of different 'reception frequency' related to the classroom teaching. And the same is true about the 'relay frequency of the teacher'. The most efficient communication is achieved when the teacher and the pupils are interacting at about the same frequencies. The message will be vague whenever there is a difference in the frequency match of the respective source. For example, the different cognitive styles of pupils may demand a different kind of method of teaching. The ideal communication can be achieved only by matching their respective styles.

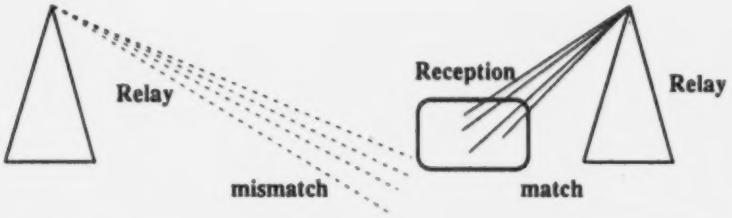


Figure 9. Lack of communication caused by mismatch.

If, however, the teacher and the pupil completely differ in their styles, the result is a gap in communication, which in turn causes vague and ineffective communication. The gap in communication is not an 'all or no' business, it is a matter of degree. With

reference to Hunt's model of conceptual level matching, the basic dimension of environmental variation is the degree of structure or degree of organization provided by the learning environment. (For the person-environment dimensions in the CL matching model, see Figures 10 and 11.)

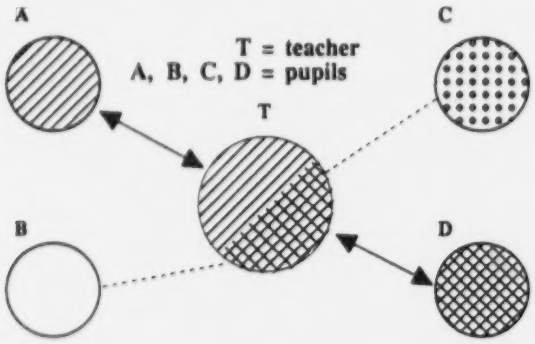


Figure 10. Level of communication depends on the match between the two units.

The Paragraph Completion Method (PCM) test (Hunt & al. 1978) has been administered to several thousands of persons. The test score shows the pupils' need for structure in teaching. It gives a lot of badly needed information about poor performers. The test was primarily developed for grades 6-13.

One remark must, however, be made. Hunt admits that CL-level measured with his test is related to IQ/ability/achievement, but he goes on saying that it is distinct from those. Persons very low in ability/achievement are also nearly always low in CL. However, high ability/achievement persons vary in CL. This may be connected with the interpersonal immaturity-side measured by the test: the test demands high verbal ability due to the high processing level of thought. People showing immaturity in personal relationships tend to solve problems with other means than words, with aggressiveness, for instance.

According to Hunt's model, environment may vary in terms of degree of structure. Under a high structure condition the student has little responsibility and the environment is mainly determined by the teacher, whereas in the case of low structure the student has much responsibility for organizing the environment. As the low CL pupils are dependent on external standards, they are likely to gain more from a highly structured approach. The high CL pupils are more independent and may be expected to profit more from low structure, or be unaffected by variations in structure (see Figure 11).

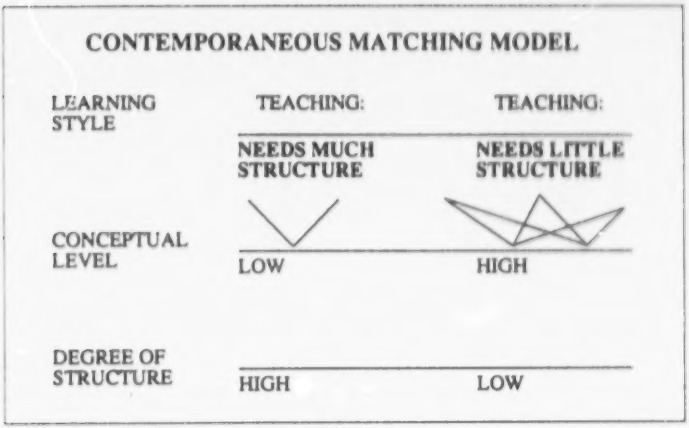


Figure 11. Contemporaneous matching model (adapt. from Hunt & Sullivan 1974, 220.)

A person having higher conceptual level should be able to discriminate, integrate and differentiate the information more effectively than a person low in conceptual level. High conceptual level may for these reasons be assumed to be positively related with effective processing of second language acquisition. Some studies have been undertaken about the relationship. Leino (1982) in Finland, and Kristiansen (1990) in Finland and India found a clear relationship between students' CL values and performance in foreign language learning.

Hunt's theory has been proved useful for general educational research and is widely appreciated. The theory emphasizes the student's mental growth and also shows how important it would be for the teacher to adjust his teaching according to the understanding of each pupil. In spite of some unanswered questions concerning CL, Hunt's measuring instrument must be considered valid. Hunt also reports about forming CL groups in schools. Homogenous classroom grouping by CL-level has been carried out mainly in grades 7-9. Generally, CL does not change quickly, and therefore CL-grouping is not suitable if quick results are asked for (Hunt & al. 1978, 47). However, the CL-level gives valuable information about the learners.

8.8. Learning styles

Learning style refers to the way an individual filters and processes stimuli from the environment. The definitions and theories of styles emphasize the *structure rather than the content of thought*. Structure refers to how cognition is organized, whereas content refers to what knowledge is available. Specifically in a classroom situation, learning style will refer to pupils' preferences in ways of selecting, acquiring and processing

the information. The difference between learning style and cognitive style is not completely clear. Both are used to refer to the student's typical mode of perceiving, thinking and problem solving (Leino 1980, Messick 1984). In educational settings, Leino and Leino (1990, 36) suggest that the term learning style should be preferred.

Several researchers compare the concepts of cognitive styles versus ability. The basic difference is that cognitive style concerns the questions of *how* the behavior occurs, and of the manner in which information is processed. Abilities again refer to the content of cognition, to *what* information is processed and in what form (Leino 1980, 1982; Messick 1982, 1984). The definition is not very clear and as Leino says, there is some overlapping between particular abilities and styles. As a summary of the differences she gives (1980, 6) the following table based on Messick:

Abilities	*Cognitive styles*
- what, content	- how , process
- maximal performance	- typical performance
- unipolar	- value differentiated
- limited in scope	- cut across domains
- background: mental test	- background: study of perception & personality
varying degrees of overlap in terms of conception and measurement	

One approach offered for learning problems are different learning styles. (For a review of learning and learning styles see e.g. Messick 1982, 1984; Ropo 1984; Leino & al. 1989; Leino & Leino 1990). In the context of foreign language learning, the most extensive studies concerning learning styles have been carried out by A-L. Leino (see e.g. 1980, 1981, 1982, 1987, 1988; Leino & Leino 1982). Leino has studied learning styles both theoretically and in practice, testing school children. She found that pupils doing well and doing poorly differ in their Conceptual Level (CL) scores. Her results are supported by Kristiansen (1990). Leino et al. (1989, 40) stress that knowing one's learning style can help students to learn and get ideas as to how to orient the studies in the future, and in addition help teachers to understand how students learn best.

Another style intensively studied is Field Independence/Dependence (e.g. Witkin & al. 1971, 1977; Messick & al. 1976; Entwistle & Ramsden 1983; Lapatto 1983). According to Witkin a person who is field-dependent is more responsive to social cues and performs better in tasks which require attending to the situation as a whole. A field-independent person is more independent of social pressures and performs better on tasks which require analyzing a situation into its component elements. Field independence/dependence (FI/FD) has also been connected with foreign language learning, but the results have not been clear. Some connection has been found (e.g. Leino 1982;

Lapatto 1983). Hansen and Stansfield (1981, 1982) found that FI learners were slightly better in communication tasks. In academic and combinatory tasks the differences were greater. Later (1984) Hansen found that FI students scored better in a cloze-test. When measuring oral performance Bacon (1987), however, found no differences between FI and FD learners in the amount and quality of their speech.

There are some problems in connection with the dimension field independence/ dependence as a cognitive style. In the test measuring it there are right and wrong answers (e.g. Witkin's GEFT). It has been connected with ability (e.g. Sternberg 1987), and it has been shown to favor males and to measure spatial ability to a certain extent (e.g. d'Anglejan & Renaud 1985; McLeod & al. 1986; Halpern 1986).

Like the FI/FD dimension, poor learning style profiles studied extensively by Letteri (1980, 1982a, 1982b, 1985) are connected with ability. According to Letteri the difference is that when dealing with styles the person's typical way to approach the task is involved, while dealing with abilities the interest lies in what the subject is able to do. Letteri uses a test battery of seven bipolar dimensions: Reflective/Impulsive; Scanning; Analytic/Global; Breadth of category; Tolerance for ambiguity; Leveling/ Sharpening and Complexity. Extensive remedial programs (two hours a week for 15 weeks) to improve the learning outcomes of poor performers have been developed and applied repeatedly by Letteri on the basis of poor learning style profiles. The practicing materials consist of sets of different kinds of pictures and written materials. The tasks include such tasks as finding differences and similarities between pictures or figures, different kinds of grouping of pictures or words, writing opposites to given words, comparing pictures, drawing and analyzing figures, considering perspectives which may not agree with one's own, etc. (For details, see e.g. Kunz & Camp, 1984.) Letteri reports considerable improvement in the pupils' learning styles. Transfer to academic areas has been found by using standardized tests by the local schools.

Letteri stresses the importance of developing the learners' cognitive abilities. Letteri's approach to learning difficulties is one possibility of improving learning outcomes. In his experiments, however, the parents of the pupils usually had to pay for the extra lessons, and he also reports some cases where no noticable improvement occurred. In Finland Takala (e.g.1970, 1976, 1977; Takala & Havola 1983) has repeatedly emphasized that the only way to attain improvement is by training cognitive skills.

According to Sternberg (1990), it is important to note that any subject can be taught in a way that is congruent with any style. It is possible that some learners like problems that are structured for them, and even like solving problems as long as they are spelled out for them, while others like to create their own structures and enjoy dealing with problems that lack structure and encourage creativity. Teachers who are more externally oriented possibly emphasize group activities and also value more those students who are willing to work with others. An internally oriented child may feel uncomfortable in such working situations. Sternberg claims (p. 368) that teachers tend to confuse style with quality of mind, and since teaching often reflects teachers' personal thinking styles, we reward students whose styles correspond to ours at the expense of those whose styles differ.

In sum, it could be stated that both learners and teachers tend to exploit their preferred styles, which may or may not match. It is possible that the teachers tend to emphasize their own styles when teaching, with the result that students whose styles correspond with theirs appear to be brighter than the others. This may lead to practices where some pupils learn a lot less than their maximum. Therefore, it is important for teachers to be aware of their students' preferred learning styles and learning activities in order to maximize the classroom learning.

8.9. Learning potential approaches - learning to learn

8.9.1. Developing metacognitive abilities

In cognitive acts we can distinguish between those that are verbalized and those that are not. Unverbalized cognitive acts, sometimes called mental acts, include supposing, remembering, comparing, etc. A special subcategory of unverbalized cognitive acts are metacognitive acts. In them we think about thinking: our own or anyone else's (Lipman 1987, 160). Metacognitive acts are very important because they provide opportunities of self-correction. Among the early researchers to stress the importance of metacognitive skills are Flavell (1971, 1981; Flavell & Wellman 1977), Brown (1978); Myers II and Paris (1978).

Metacognition refers to the person's understanding of his own cognitive systems and resources. Individuals differ considerably in their ability to assess their own knowledge. Efficient learning is characterized by the learner's active planning, monitoring and evaluation of his own learning. Some children fail in these activities. As an example can be mentioned some learners' inability to recognize an increase in difficulty level, and inability to plan ahead, or to monitor the outcomes of their performance.

Metacognitive processes can also be applied to foreign language studies. The learner must have a sense of what is essential in the text content and what is less important. According to Flavell and Brown, the evaluation of the learning strategies should document examples of students' describing how they arrive at a certain answer. In this way the students might avoid certain problems and approach new, similar problems differently.

Activities studied under the heading of metacognition are *checking* the outcome of a learning task, *planning* what to do next, *monitoring* the effectiveness of all actions, *testing*, *revising*, and *evaluating* one's strategies for learning. Campione et al. (1982) strongly stress that if a pupil is aware of what is needed to perform effectively, he can then at least try to meet the demands of a learning situation more adequately. If a pupil is not aware of his limitations as a learner, or is not aware of the complexity of the task at hand, the chances for him to overcome his learning problems are small. This ability to reflect on one's own cognitive activities while reading or solving problems has been found to be a fairly late-developed skill, yet it has important implications for the pupil's effectiveness as an active, conscious learner (p. 433).

Several researchers dealing with learning difficulties stress the importance of metacognitive abilities. Cavanaugh and Borkowsky (1980) found significant correlations between memory and metamemory among first, third and fifth grade children. In a longitudinal study later, Kurz and Borkowsky (1987) found superior performance for children who had received both summarization and metacognitive training.

According to Campione et al. (1982, 437), instructing metacognition does not, however, always result in general improvements of performance. Strategies needed for learning must be frequently practiced. First we ought to know how to teach skills needed for proper task activities, and then later instruct about metacognition. In fact, according to Campione et al., there is some evidence that training involving some self-management routines has produced more wide-spread effects.

Cavanaugh and Perlmutter (1982) are very critical about the research undertaken in the area. They suggest consulting research that has integrated knowledge with behavior (e.g. Leonti.. 1981; Vygotsky 1962). They also point out that while it has been established that the amount of knowledge about memory increases with age, it is not yet known how such knowledge is acquired or how knowledge changes over time.

The relationship between metacognition and consciousness has not yet been properly defined. Measures of metacognitive knowledge have usually been based on interview data. At least young learners are not always able to describe their processes of solving a learning task (e.g. J. Leino 1981; A-L. Leino 1982; Siegler & Richards 1982).Furthermore, all young children do not seem able to use metacognitive strategies (e.g. Lovett & Flavell 1990). These facts need not, however, be a dead end. Ingrid Pramling, who has worked as a pre-school teacher, studied children's metacognitive development intensively for a decade and showed that strategies can be taught to children who do not work systematically (e.g. 1987a, 1987b, 1988, 1990). At least some metacognitive abilities can be enhanced by systematic training. Possibly even a majority of children can learn how to learn more efficiently, and know why and when learning improves (see e.g. Tough 1979; Pressley 1982; Pressley & al. 1984; Ghatala 1986; Ghatala & al. 1986; Elliott-Faust & Pressley 1986; Schneider 1986; Beuhring & Kee 1987).

8.9.2. Expert /Novice differences in performance

In addition to the more processrelated differences just discussed, research on expert/ novice differences in knowledge and performance has come into focus in recent years. Earlier individual differences in expertise were usually explained in terms of general abilities or talents, i.e., experts knew more because they learnt things more quickly and were able to process new information more efficiently. Now, according to research in cognitive psychology, the term novice implies a potential for becoming an expert. What distinguishes experts from novices are differences in the knowledge base and its organization (e.g. Glaser & Chi 1988; Posner 1988).

Earlier research on individual differences was primarily concerned with psychometric description and prediction. One can say that not only was there a certain lack

of interest in individual differences, but also that the differences in learning outcomes were rather a nuisance factor! This viewpoint is presented by Shuell (1986), who has studied both expert/novice knowledge-based differences and process-related differences. These two are not mutually exclusive, they rather serve to organize our thinking about individual differences and their implications for instance for remedial instruction. How research on individual differences has been broken into two specific fields is presented by Shuell (see Figure 12).

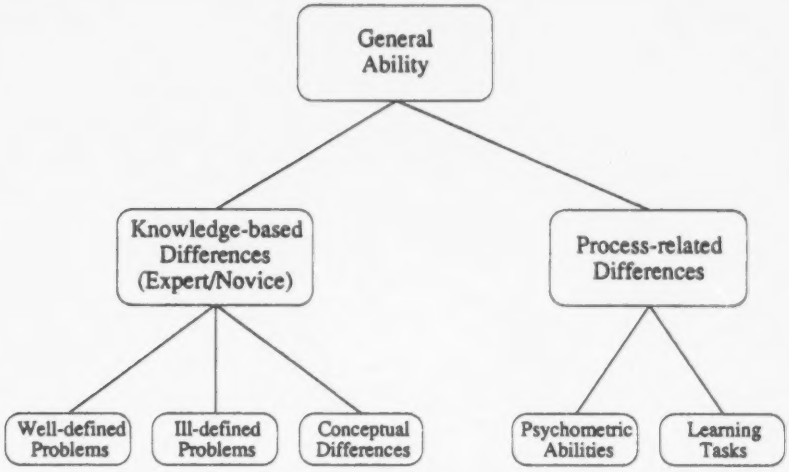


Figure 12. The relationship among various approaches to research on individual differences (Shuell 1986, 358).

In the present study the mental processes that mediate learning are of greater interest than merely the performance. As Shuell points out (p. 357), there has until very recently been only little if any interest in factors related to and influencing learning. He also strongly argues that ways in which we can influence learning in terms of teaching should be the primary concern of educational research.

Several researchers stress that differences in the amount of knowledge per se and/or superior reasoning and superior memory ability are not sufficient to explain differences in performance between experts and novices (e.g. Chi, Glaser & Rees 1982; Sternberg 1985a, 1987; Shuell 1986; Voss & al. 1986). The important question for an educator is how these differences in knowledge came into being. As Sternberg points out, simply playing the piano for many years does not guarantee that one becomes a concert-level pianist, or simply reading does not guarantee a large vocabulary. *What seems to be critical is not the amount of experience, but rather what one has been able to learn from and do with that experience* (p. 307). He concludes that individual

differences in knowledge acquisition have priority over individual differences in actual knowledge.

The research evidence points in the direction that we should *not* go from the over-emphasis on process to an overemphasis on knowledge structure. The solution probably lies in the interaction of these two. For instance, why do some people acquire better vocabularies than others? Is the crucial factor the knowledge structure of the person or his processing abilities? Unfortunately, we do not know the answers to these questions.The need of vocabulary studies concentrating on the way new foreign language words are taught in schools has already been expressed by Takala (1984a, 1989). In addition, there are some studies exploring why some pupils learn grammar easily and some do not (e.g. Kristiansen 1990). Before we know more about the mental processes involved, it is not possible to answer the question: Why do some pupils easily become experts (with the same amount of teaching) while some others can hardly be called even novices?

Factors connected with expert/novice learning must be closely related to learning strategies. There is by now ample evidence to prove the importance of effective strategies when trying to learn different kinds of information. Many students are, however, unable to choose effective strategies (e.g. Salonen 1988; Paris & Oka 1989; Vauras 1990, 1991). There is also ample research evidence about effective learning strategies when studying language material (e.g. Kauppinen & Laurinen 1984, 1987; Linnakylä & al. 1988; Laurinen 1989, 1990; Linnakylä 1990; Takala 1989, 1990; Oxford 1990; O'Malley & Chamot 1990). Clear evidence of the importance of learning strategies is given by Stigler & Perry (1990). They compared mathematics learning in Japanese, Chinese, and American classrooms.

Research on the development of expert/novice differences is increasing rapidly, especially within cognitive psychology (see e.g. Adelson 1984; Intons-Peterson & Smythe 1987). Earlier most research about expert/novice differences concentrated on problem solving in physics, mathematics and social sciences, while now there is also substantial research evidence on expert/novice differences in language learning.

In foreign language learning, research on expert/novice differences is only beginning. Barry McLaughlin and his associates have, however, conducted several investigations among monolinguals, bilinguals, and multilinguals (e.g. Nation & McLaughlin 1986a, 1986b; McLaughlin 1990a, 1990b). McLaughlin defines experts as persons who have learnt a number of languages. These individuals have learnt and routinized complex skills that have become automatic. In 1986 Nation and McLaughlin carried out an experiment in which they compared information processing in multi-, bi-, and monolingual subjects' learning a miniature linguistic system. They found that multilingual subjects learnt the grammar significantly better than bilingual or monolingual groups only when the instructions called for implicit learning. Nation and McLaughlin suggest that pattern recognition skills have become relatively automatic in multilingual subjects. Attention is then free to concentrate on the recognition of rule-governed regularities.

In 1990 McLaughlin reports another experiment where even vocabulary learning was involved. Half of the multilingual and monolingual subjects were told to *memorize* the material, the other half to *look for underlying rules*. No differences were found in vocabulary or rule learning, the experts were no better than than the novices. There were, however, differences in how the two groups performed the tasks. Multilingual persons were more likely to use mnemonic devices than linguistic strategies in the memory condition, but in the rule-discovery condition all subjects preferred linguistic strategies to mnemonic devices. In addition, it was found that multilingual subjects used a wider variety of different strategies in the rule discovery than in the memory condition. McLaughlin concludes that the ability to exert flexible control over linguistic representations and to shift strategies may result from 'learning to learn'. Experts seem to be aware of how they learn best.

To sum up, there is considerable evidence about different learning strategies (for a review, see e.g. Oxford 1990), yet much more research is needed about how to become an expert in language learning. McLaughlin warns against using taxonomies of learning strategies without discrimination. There is not much research about them. Whether it is possible to improve language aptitude is in this context an important aspect as well (see e.g. Carroll 1985; Skehan 1986). According to Carroll, it is very difficult to change a person's ability to learn languages. This does not only concern learning vocabulary and grammar but phonetic coding ability as well, which is often poor in slow learners (e.g. Service 1988). In addition, McLaughlin emphasizes the importance of the quality of teaching, a set of measures connected with family background, parental education, and parental literacy. Also, he once again stresses the clear evidence for a strong relationship between first and second language skills. There is also clear evidence for the interdepence of academic skills across languages. All learners have not had the same opportunities to develop their language learning aptitude. So, it remains to be seen whether all novices in foreign languages can become experts when learning at school is concerned. This aspect will be discussed in the following section.

8.9.3. Learning potential programs

The most general conclusion one can draw about pupils facing learning difficulties is probably that these children are deficient in their abilities to acquire and use information, and that they show lack of transfer. Talking of foreign language learning, it can be said that they cannot remember words, nor use grammar correctly. These facts must, however, be considered more as symptoms than as basic causes of failure.

According to Carroll (1985) the available research evidence, however, suggests that foreign language abilities are hard to modify, and additional foreign language training itself does little to modify them, contrary to common beliefs. Yet it is possible that remedial teaching given has been only sporadic or has consisted of too little additional teaching. If language aptitude tests mostly measure verbal abilities developed during the person's whole life, it is not surprising that aptitude tests given at the start of training

and again at the end of training show little change. According to Carroll, even strenuous efforts to train phonetic coding ability and grammatical sensitivity - both factors that have been found to be essential in foreign language learning - have been relatively unsuccessful. In addition, when there has been improvement in some specific abilities trained, the transfer effect has not been proven.

How could we then help a poor foreign language learner? One possibility might be to give intensive remedial teaching over a long period, another to train mental abilities that have been found to be essential for foreign language learning. Different kinds of elaborative approaches might prove to be beneficial; in inductive reasoning tasks pupils learn a variety of rules and principles that can be recombined or modified. Research evidence is accumulating that such intervention programs also result in transfer effect. We should probably look more at knowledge acquisition processes and strategies in foreign language learning than merely at accumulated knowledge.

The zone of proximal development

Traditionally, intelligence has often been defined as 'the ability to learn'. The importance of learning how to learn was strongly emphasized by Binet about 80 years ago, equally learning by doing. Learning-to-learn approaches claim that the learner should become aware of his cognitive processes while learning, i.e., possess and make use of his metacognitive abilities. Yet most intelligence tests only measure the final product at a certain age. Such static measures may not provide a sensitive index of the *potential for improvement* over current performance levels, they do not show the *optimal level of performance* of which the student is capable. This information is of interest from the remedial point of view. Especially for pupils from disadvantageous homes, static test scores often represent an underestimate of ability (Campione & al. 1982).

The zone of proximal (or potential) development was introduced by the Russian psychologist Vygotsky (1978). He claimed that a child's standardized test performance is at best a quantitative index of his current developmental level, and that such measures fail to provide any information about the child's learning potential. According to Vygotsky, all psychological processes are essentially social processes, initially shared particularly between children and adults. Within this context, Vygotsky talks about gradual internalization of cognitive activities, preferably with the help of an adult person. He makes a distinction between children's actual developmental level, and their level of potential development, the degree of competence they can achieve with adequate aid. Several theories and training programs of practical value have later been developed, not only in Russia but in different parts of the world.

With the help of these programs it is possible to detect which pupils are able to learn when getting adequate help. Children experiencing learning difficulties and mildly retarded children do not differ greatly in terms of their starting competence on a variety of cognitive tasks included in the programs, yet the two groups differ dramatically in terms of their ability to benefit from the additional cues provided by the tester.

There are also big differences when transferring the results to new variations of the task, not only within the test situation but even in subsequent independent class

performance (Campione & al. 1982, 1985; Sternberg 1985a). Campione et al. report how it has been repeatedly found that the two different kinds of children are similar in their original performance of the task but that they differ dramatically in how readily they respond to training, in how long they maintain the effect of training, and in how far they transfer the acquired skills (1982, 440). From the foreign language viewpoint it is the transfer of training that is the most important finding.

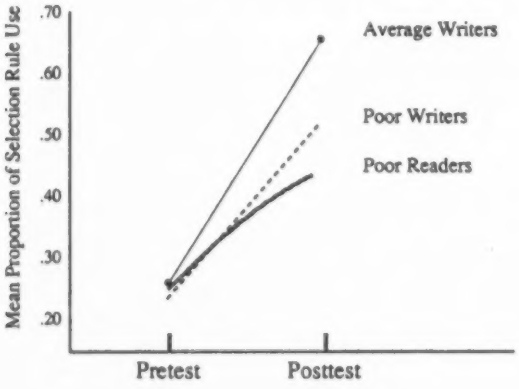


Figure 13. Mean proportion of rule use before and after instruction, as a function of ability group (from Training summarization Skills: A comparison of teaching methods by J.D. Day, printed in Campione et. al. 1982, 431).

The best-known and probably most widely used training programs based on the zone of proximal development are Feuerstein's Instrumental Enrichment (IE) intervention program and Learning Potential Assessment Device (LPAD). Feuerstein reports dramatic improvement as a result of training with his program. It has been widely used for instance both in Israel and in the USA (Feuerstein 1980). The material is commercially available and is according to Sternberg (1985a) together with other similar programs about the only highly innovative teaching and testing device developed for a long time. (For details, see e.g. Campione & al. 1982.) Feuerstein's program contains tasks very similar to those in Raven's Progressive Matrices as well as analytic perception, span tasks, and embedded-figure-type tasks. The success of training is measured with similar tasks, a procedure which certainly causes criticism. Feuerstein admits that *school subject matter learning cannot be changed easily*, yet he claims to have found big transfer effects, especially where learning is based on insightful processes. What has seldom been reported is that by employing Feuerstein's IE program the pupils get extra teaching 3-5 hours a week for 2-3 years.

The learning potential approaches have been given a lot of attention because they seem to be at present among the very few available devices that, according to research

reports, give the poorest performers some lasting help in their learning difficulties. Cognitive abilities generally take a long time to develop. Therefore it is futile to expect any kind of sporadically given remedial teaching to help these learners.

8.10. Concept mediation

It has been discussed earlier that concept formation plays an important role in foreign language learning. The concept mediation hypothesis proposes that the only connection between two languages is via an underlying conceptual system. This is in contrast with the word association hypothesis, which proposes that new words in a foreign language are directly associated with words in one's native language. In other words, according to the concept mediation hypothesis, the foreign language words are not directly associated with the first language words but instead with nonlinguistic common word concepts (see Figure 14).

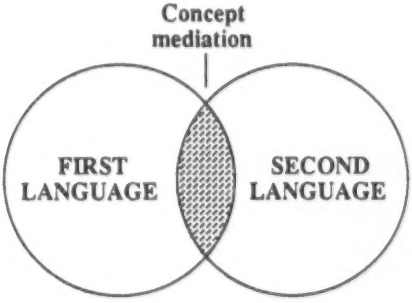


Figure 14. Language learning through concept mediation.

The results of Potter et al. (1984) concerning the word association and concept mediation hypotheses are of great importance to foreign language learning reseachers. These two hypotheses make different predictions about the time to name pictures in the second language relative to the time to translate first-language words into the second language. Both hypotheses, however, are consistent with the assumption that there is a distinction between word representations and their concepts of meaning.

An observation consistent with the distinction is the well-known difference in naming time for pictures and written words: words can be named (read) aloud faster than pictures of the same items (e.g. Baddeley 1986). However, in a task such as matching a word or picture to a superordinate category, which requires understanding of the stimulus concept but not overnaming, responses are just as fast (or faster) to pictures as to words. This asymmetry suggests a functional division of memory. A spoken name is accessed more directly from the written word than from a picture, which must be understood before it can be named.

How is then a second or a foreign language represented? According to the word association model, access to and from the second language word (L2) is exclusively via the first-language word (L1), shown as a dashed link between L1 and L2 in Figure 15. (The lengths of arrows should be ignored in interpreting this figure.) According to the concept mediation model, the bilingual's second language is associeted directly with the common concept, but only indirectly with the first language word.

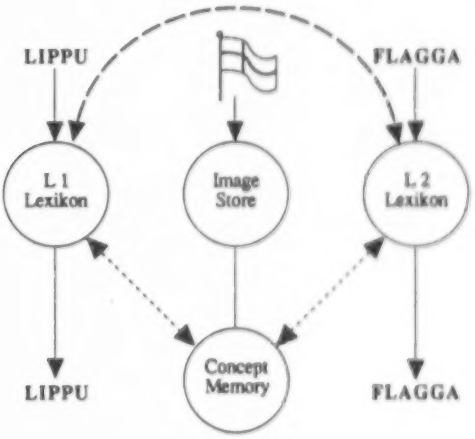


Figure 15. A comparison of word association hypothesis and concept mediation hypothesis about relation between equivalent words in bilinguals' first language (L1) and second language (L2) (adapted from Potter et al. 1984, 24).

Potter et al. (1984) propose an intermediate model in which second or foreign language learners start out only with lexical associations, but gradually develop direct links between the second/foreign language lexicon and concepts, as in the concept mediation model. The word association link will then eventually be replaced by the concept mediation link. To test these possibilities Potter et al. carried out two experiments where the critical comparison was that between picture-naming in the second language and translating from the first to the second language.

Pictures were named slightly faster than words translated (Potter & al., 34).Their results were consistent with the concept mediation hypothesis, and contradicted predictions of the word association hypothesis. This provides some evidence about the presence of certain underlying conceptual processes which seem to operate during foreign language acquisition/learning tasks. This kind of operating processes are active in both picture-naming and translating tasks.

These results may give increased insight in poor foreign language learning, and also make it easier to understand why the differences between good and poor performers gradually become bigger and bigger.

Poor performers are generally slow in producing the target language both when answering the teacher's and the peers' questions. They are also slow in producing foreign language spontaneously (e.g. Syvälahti 1989). By the time they are ready to produce something in the target language, the other pupils have either become bored when waiting, or the teacher has chosen one of the quicker pupils to answer. They find it extremely difficult to form and mediate concepts if there are clear differences between their mother tongue and the target language.

How concept mediation plays an important role even at the beginning of foreign language studies can be illustrated with the following example. Among the very first sentences taught to children during the foreign language lessons is one used for introducing oneself in some way or other:

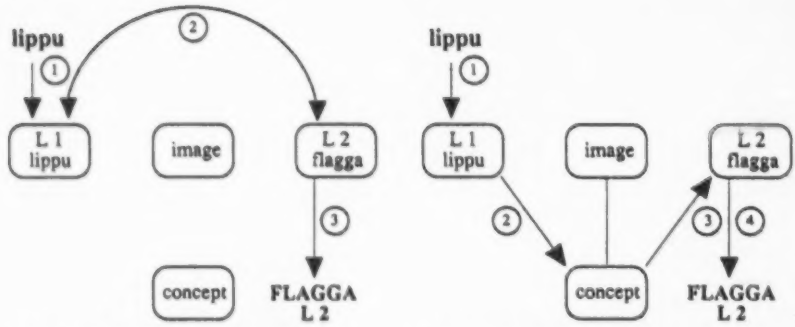
Swedish: "Jag heter (Ulla/Kalle)." Jag = I

In Finnish this sentence is often said by using a possessive pronoun, a suffix or both:

Finnish: "Minun nimeni on (Ulla/Kalle)." Minun = My
-ni = My

Why does this cause poor performers great difficulties? Because in Finnish they use the word ´minun´ (= my) instead of ´minä´ (=I) it is very difficult for them to use ´jag´ in Swedish, or ´I´ in English. There are lots of poor foreign language learners, both school children and grown-up learners, who even after studying the language for a long time cannot produce this sentence spontaneously in the correct form in Swedish - probably due either to wrong learning strategies or to poor concept formation, or both. Better results can be noticed if the teaching starts with communicative exercises, such as situational acting, omitting translation in cases like this. Even so, the students may translate silently in their minds.

It follows from the concept mediation hypothesis that in order to be efficient in second/foreign language learning the learner should be able to discriminate, differentiate, and integrate the concepts effectively. Learning the Swedish word 'flagga' (Engl. 'flag') via translation and concept mediation hypothesis is presented in Figure 16. The figure shows the weaknesses of learning foreign language words without really understanding the concepts and without forming proper images.



(a) Translation into L 2 as proposed by word association model

(b) Translation into L 2 as proposed by concept mediation model

Figure 16. Translation processes according to word association and concept mediation hypotheses (adapted from Potter et al. 1984, 25).

8.11. Memory

Learning and memory are closely related. Consequently, the problems of learning can only be solved if the nature of human memory is satisfactorily understood. The term 'memory' is generally used to mean our ability to acquire and retain information, and recall it when needed. Therefore, it is not surprising that memory research concentrates on the acquisition and retention of verbal material.

Considering this, it is regrettable that applied linguists have paid little attention to widely known research on memory processes. Only a few investigations and surveys have been carried out (Rivers 1964; Pimsleur & Quinn 1971; Takala 1976, 1982; Leontiev 1981; McDonough 1981; Takala & Havola 1983). One reason for this lack of interest among applied linguists may very well be that they are not familiar with memory research and experiments concerning memory processes.

Memory theorists have by now rejected the view that memory is best thought of in terms of mechanical associations. The challenge to associationism came from the *cognitive approach* to human functioning. In 1967 Neisser defined cognition as 'all processes by which the sensory input is transformed, reduced, elaborated, stored, recovered and used'. Instead of being seen as passive recorders of associations, human beings are regarded as *active processors of information*. The information-processing approach suggests that memory involves multiple stages and manipulations of information, and is both reproductive and constructive by nature. Consequently, language can no longer be seen as another form of behavior but as a uniquely organized skill, highly abstract in structure, and calling for a complex set of processes for its use.

In the early stages of the information-processing models the structural aspects were the main interest of memory theorists. Unfortunately, they did not contribute much to the practical applications of memory research. Now a great many theorists are

involved in studying the *processes* that influence learning and memory, processes such as *attention, encoding, rehearsal, and elaborative associations*. It seems clear that it is the *qualitative* nature of the processing that is important for memory. Not even study time or effort involved have been shown to be of equal importance.

8.11.1. Levels of processing

The psychological researchers who in their studies of memory definitely placed the emphasis on the *type of processing* carried out on information being stored, were Craik and Lockhart (1972) and Craik and Tulving (1975). This approach to the study of memory gives a more flexible framework than do models based more directly on the information processing analogy. The model proposes that incoming information may go through a variety of encoding operations or processing. According to this view, memory is determined by the *operations performed on the incoming information*. In the levels-of-processing model, the short-term memory is primarily a process of attention rather than a place for storing material.

Perception and *selective, continual attention* are the first important aspects in this model from the point of view of foreign language learning, factors that are often overlooked in school learning — but developed very far for instance in advertizing (see e.g. von Wright 1986, 1989). The importance of paying continual attention to the information is strongly emphasized in this model.

Models of memory such as that of Atkinson and Shiffrin (1968, 1971) emphasize the role of *intentional* control processes, and therefore have difficulties in accounting for the high level of performance obtained under *incidental learning* conditions. That is, a considerable amount of learning takes place without any intention to remember. The levels-of-processing approach also takes care of this aspect of memory, which has hardly ever been discussed in connection with foreign language learning.

Craik and Lockhart do not argue for eliminating the distinction between short-term and long-term memory. Instead, their view of memory is procedurally oriented, stressing the relations between encoding operations and memory performance. The model proposes that the *level of processing (deep, intermediate, or shallow) affects how well an item will be remembered*. The emphasis is on the cognitive processes carried out on the stimuli. Craik and Lockhart suggest that trace persistence is a function of the depth of analysis, with deeper levels associated with more elaborate, longer lasting, and stronger traces. The level of processing, then, affects how well an item will be remembered.

The article by Craik and Lockhart (1972) has been enormously influential, and the original formulation of depth of processing has been refined in different ways (e.g. Craik & Tulving 1975; for a summary of the development see Lockhart & Craik 1990). White (1983), in his review 'Prominent publications in cognitive psychology', states that the article has undoubtedly had the greatest influence of any single contribution published in the 1970s and early 1980s. It shifted the interest from memory structures to the empirical study of mental processes, resulting in lots of empirical research.

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In educational psychology, the most famous application is probably the work done by a research group led by Ference Marton in Sweden (e.g. Marton & Säljö 1976a, 1976b; Svensson 1977; Marton 1983). In Finland von Wright and his associates studied school-age children's text learning strategies quite extensively in the 1980s (e.g. von Wright 1980, 1982, 1986; Vauras 1990, 1991). Both Marton and von Wright with their associates (e.g. 1979, 1981) provide clear evidence for the hypothesis that depth of processing is closely related to the learning outcomes.

The levels of processing framework has also been applied to research concerning learning difficulties. It has been found that although subjects at higher intellectual levels are superior both in deep and shallow conditions, at each intelligence level more stimuli are remembered when the material to be learnt is processed deeply (e.g. Boyd 1984; Boyd & Ellis 1986).

Considering the wide-spread educational applications of the levels-of-processing approach to memory research (see e.g. Lockhart & Craik 1990), it is unfortunate that as far as foreign language learning is concerned, the educational applications are close to zero. In school classes, tasks presented to the poorest performers (such as copying, multiple choice answers, true/false-statements, etc.) often require only surface level processing. In addition, pure guessing is often possible. Shallow processing of the material studied may turn out to be an important factor in foreign language nonlearning, and specifically so when the poorest learners are concerned.

8.11.2. Self-generated elaboration

In 1975 Craik and Tulving added the idea of *elaboration* of a stimulus *within a level* to the model. By elaboration within a level is meant the extent to which incoming information is processed so that it can be tied to, or integrated with, earlier acquired information. According to Craik and Tulving, *the greater the degree and richness of elaboration given to an item, the more likely it is remembered.*

Ellis and Hunt (1983) gave the following definition of elaboration, to distinguish the concept from that of organization: 'Elaboration, like organization, is a process of relating facts or separate words together. Unlike organization, however, elaboration refers to relationships among to-be-remembered events *and additional information which is not to be remembered.*' (p. 93) This distinction is necessary and useful. In educational settings Levin (1988) defines elaboration as 'meaning-enhancing additions, constructions, or generations that improve one's memory for what is being learned' (p. 191).

After Craik and Tulving's original experiments on the effect of richness of elaboration, several researchers and research groups have focused on elaboration as a central process in memory (see e.g. Reigeluth & Merrill 1979; Reigeluth & al. 1980; Merrill & al.1981; Laurinen 1985; Levin 1988; Pressley & al. 1987; Schneider & Pressley 1989). The concept of elaboration has become the major theoretical construct to account for differences in recall performance. Also, the empirical research on how elaborative processing occurs and affects recall performance has grown ample.

A current theoretical model that describes the ways in which elaborative processing affects recall is that of Anderson and his associates, based on varied experiments between 1976 and 1985. According to Anderson (1976) and Anderson & Reder (1979), the to-be-remembered material and any elaborations are encoded into a propositional network. They assume that long-term memory is a network of interconnected propositions, and by generated elaborations new propositions are added to this memory network (p. 387).

These researchers argue that the variations in recall with depth of processing result from the *number of elaborations* a person produces while studying the material. Therefore, the concept 'elaboration' explains the depth of processing as well (see e.g. Anderson 1976, 1983a, 1983b, 1990; Anderson & Reder 1979; Bradshaw & Anderson 1982). Unlike Anderson and his associates, Craik & Tulving (1975) and Lockhart & Craik (1990) claim that both depth of processing and elaborations are needed for better recall.

Sets of propositions can vary in their richness and redundancy. A person is *better at producing the type of elaborations with which he has most experience*. The type and extent of elaborations will be determined by our real-world experiences. When applied to foreign language learning, we have to add the mastering of the target language. Given suitable practice, a learner could become good at generating elaborations, provided he was allowed to produce elaborations meaningful *for him* . Unfortunately, people do not often generate elaborations, unless this is explicitly *demanded of them* (Griffith 1976).

Elaborations provide *redundant retrieval routes*. According to the elaboration theory, this is the most crucial factor in remembering. This redundancy helps recall by providing *alternative retrieval routes* through the network, to be used in case the more direct ones fail. The second way in which elaboration aids memory is that it helps individuals to *infer* what they can no longer actually remember. Closely related sentences help remembering what is required.

The relationship between text understanding and the ability to generate different kinds of elaborations in the mother tongue has been studied by Leena Laurinen (1985). Finnish elementary school children, 84 second- and 54 sixth- graders as well as 54 undergraduates participated in the study. The results showed that 18 second-graders scored zero in text understanding. These pupils were also extremely slow in elaboration, and they made fewer descriptive, contextual and causal elaborations than their classmates. On the other hand, the good text understanders in the second grade were as skillful in elaborating as the sixth graders on average. All these children, including those scoring zero in their mother tongue text understanding, were to start studying an additional language the following year, the second graders their first foreign language, and the sixth graders their second.

The undergraduates were superior in generating causal inferences, but they did not differ from the sixth graders in the number of descriptive elaborations. Laurinen suggests that the poor text understanders most probably have both semantic and

syntactic difficulties. The ability to generate different kinds of elaborations might have crucial effects on learning. This has been shown repeatedly by several research groups (e.g. Rohwer & al. 1977; Weinstein 1978; Owings & al. 1980; Bransford & al. 1982; Stein & al. 1982; Franks & al. 1982; Pressley 1982; Beuhring & Kee 1987; Pressley & Levin 1987; Schneider & Pressley 1989). The results also clearly indicate that people differ considerably in their elaboration activity at a very early age. This must necessarily be related to all language learning.

Foreign language learning materials generally include a great number of exercises. Nevertheless, the learning outcomes are far from satisfactory for many learners. Considering this fact, one might assume that teaching practices based on self-generation would help. An important part of the exercises would then have to be tasks that consisted of generating different kinds of sentences and discourse using a rich variety of syntactic and frame structures, expanding the practice to different topics, etc. Frequent practice through self-generation, varied and great in number, may be a prerequisite of good learning for many learners. Depth of processing would necessarily be included in this kind of practice.

It seems of vital importance for poor learners to generate varied elaborations of the material to be learnt. This can be facilitated by means of pictures because they make the material more concrete and specific, and also provide a repetition of the text content. There is growing evidence that pictures are particularly helpful for poor learners, as most of them are not good at imagery generation. (For a review, see e.g. Pressley & al. 1987; Schneider & Pressley 1989.) In contrast, good learners do not need or even want pictures, feeling these restrict their own elaborations.

Below are given some pictures that function as hints for elaborating discourse at elementary level. In Figure 17, the basic text in the study book is a travel story. Elaborations consist of different kinds of dialogues based on detailed pictures, on pictures accompanied by question words, and finally totally free self-generations of the theme. In Figure 18, the basic dialogue deals with buying a birthday cake. By using elaborations the theme can be expanded to many different kinds of shopping. Figure 19 is based on a text that deals with an appendix operation. Through elaborations any reason for seeing a doctor can be treated. Before self-generation of discourse, students construct different kinds of sentences on the basis of single words or groups of words. When practicing new grammar, sentences are generated on the basis of the grammar studied.

Capable students learn more from each instructional episode than do their less able classmates. The result is that it is possible for good learners to accumulate large amounts of foreign language vocabulary, for instance. Elaborative techniques can facilitate learning for all categories of students considerably, and for poor learners precise elaborations of the material to be learnt are necessary (see e.g. Johnson & Pearson 1978; Stein & Bransford 1979; Stein & al. 1984; Bransford & Stein 1984).

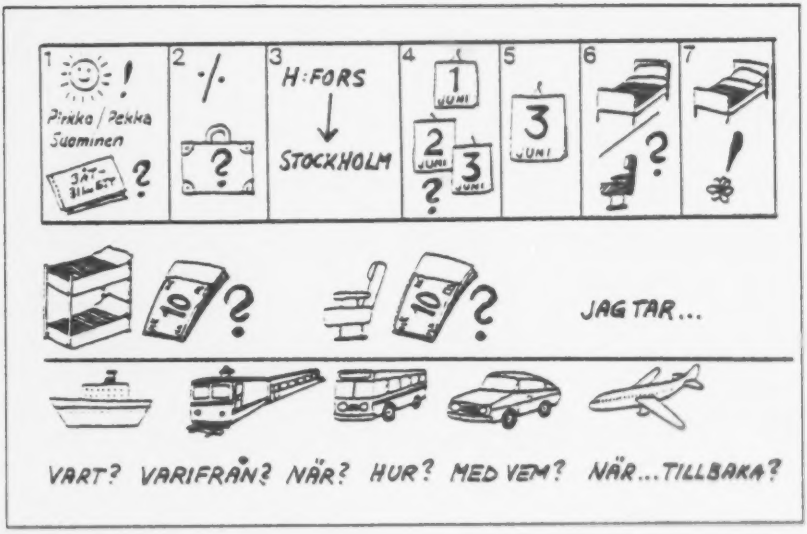


Figure 17. Traveling

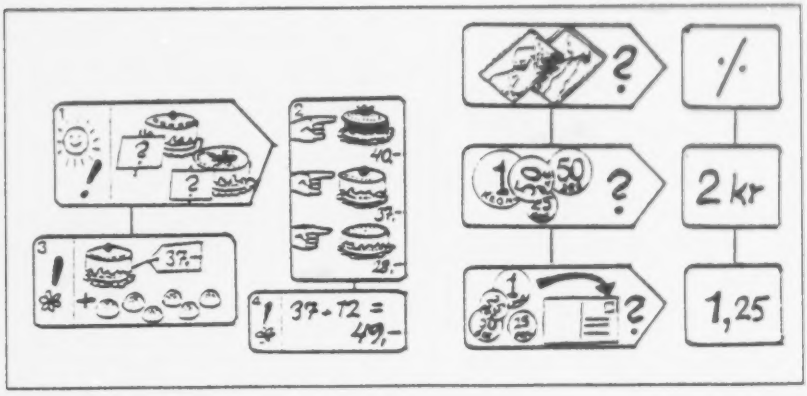


Figure 18. Shopping

Figure 19. Not feeling well

9. Language development and use in social contexts

It has been discussed earlier how Vygotsky (1962, 1978) emphasizes the importance of social factors in cognitive development, especially language development of a child. Social learning theorists (e.g. Bandura & Walters 1963; Bandura & Harris 1966; Bloom 1974; Bandura 1977; Bernstein 1970) view language acquisition as a process of second order rule learning. Rules of language are assumed to be abstracted when a child witnesses naturalistic encounters between speakers and listeners. Such linguistic rules cannot be abstracted unless the child first understands the contextual relationship among non-linguistic referential stimuli. This is supported by the observations that in second language acquisition certain conceptual processes operate (concept mediation hypotheses). Bloom (1974) observed that in naturalistic situations the child might respond to a grammatical form when he hears it, but what he understands of the form might be heavily dependent on the situation in which he hears the form or on the state of affairs it refers to.

Modeling has great influence on the language acquisition of the children (e.g. Bandura & Harris 1966; Tough 1979). Research on verbal interactions between mothers and their 2- to 3-year old children also shows modeling effects (Hood & Bloom 1979). Whitehurst and Novak (1973) and Whitehurst et al. (1974) found that modeling by itself was ineffective and concluded that children could not imitate a model's use of syntactic structure that was not already comprehended. They hypothesized a three step sequence in which comprehension precedes imitative rule learning, which in turn precedes productive use of the rule.

Determinants of the developmental relationship between comprehension and production are not well understood yet. However, Hollos (1977), who explored rural versus urban Hungarian children's ability with personal pronouns, suggests that environmental factors may play a significant role in some cases at least. The findings show that both sets of children did better at comprehending the social implications of various pronouns than they did at producing the appropriate pronouns in role playing situations, and that *urban children were more advanced than the rural children* in both skills. Hollos explained this latter finding by the urban children's greater opportunity for social-verbal interactions with a variety of other people. The most interesting result was that the difference between the two sets of children was considerably greater for production than for comprehension. *The ability to comprehend was less affected by environmental factors than was the ability to produce.*

Language development in reading situations

It is generally suggested that parents' reading fairy tales to their children has a positive effect on children's language abilities.The importance of organized knowledge for reading comprehension has been shown when children's ability to comprehend fairy tales has been studied. It has been shown (Mandler & Johnson 1977; Stein & Glenn 1978) that children at the age of 6 - 7 years recall material well when it is presented in a standard fairy tale form. Children are also able to draw reasonable inferences about

the possible causes of the characters' actions, and form more or less correct expectations about what will happen next. It is suggested that children's organization of fairy tales includes two main parts: a setting and an episode (Mandler & Johnson 1977). Differences in children's understanding and producing stories appear, however, very early. Laurinen (1990) has shown that even three-year old children differ considerably in their ability to repeat stories they have listened to.

Language development in dialogic contexts

The development of communication skills begins early in life. In recent years there has been a shift of emphasis within language development research from structural properties to language use in dialogic contexts. Integration of social and cognitive processes probably accounts better for communication development. Criticism of research and theories which analyze the so-called precursors to mature linguistic development concern the need for longitudinal data to confirm the impact of early communicative exchanges upon later development. Short-term longitudinal observations (about a year or so) have indicated factors such as maternal sensitivity within communicative exchanges as crucial for accelerating the language acquisition process (Tamir 1984).

In a longitudinal study Freedle and Lewis (1977) found that the structure of vocal communicative exchanges between mother and child at 3 months' age correlates with language acquisition at 2 years of age. *Overall maternal warmth and speech to the child seems to be of great help in language acquisition*, but the details of how and why this is so need to be further analyzed.

Among others, Valerie Service (1984) has investigated maternal styles and communicative development. She investigated differences in the adults'(=mothers') abilities to simplify their speech to a child. She found that mothers' communication with their children could be divided in two distinctly different patterns, which she called the *functional* style and the *symbolic* style. The style used may have important consequences for the child's language development. Some examples are given below:

A typical example of a 'symbolic' mother's speech to the child would be:
Jamie, Jamie, are you coming? Come on. Good boy: Up you come. Do you want to see the train?
A typical 'functional' mother would say:
Shall we go and see the train set then?

The 'symbolic' mother breaks the interaction and the language she uses into small units. There turned out to be significant differences in speech between 'symbolic' and 'functional' mothers: 'symbolic' mothers say more to their children ($p < .001$), but do so in significantly shorter sentences ($p < .05$). Here we can see the *'symbolic' mother's activity as facilitating the child's language comprehension by breaking up her speech into small chunks*. As a result, one group of infants starts to ask questions before the other. Before an infant can use an activity to *initiate* communication, he must first be able to understand it and to use it in response to one. It was also found that 'symbolic'

mothers offer their infants fewer objects to play with than do 'functional' mothers ($p < .001$). In general, 'symbolic' mothers, when giving a toy to the child, point out bits of it, and make up games they play with the infant, using the toy.

A 'functional' mother will give the child a toy, and sit back: the infant will look at the toy, play with it, put it down, and be given a new one by the mother. Differences like these in mothers' behavior and language can hardly be said to be of no importance to the child's language development, or the child's cognitive development in general. MacNamara (1984) reports similar results about identifying patterns of sounds. In order to identify a pattern it helps enormously if the pattern is heard in isolation, preferably a few times. MacNamara claims this is equal to a mother's trial to teach her infant to say *cat*:

Look at the cat, pet.
Look at the cat.
This is a cat.
A cat.
Say, *cat*.
Cat, Cat.

Examples like this give an idea of the amount and the quality of language different children have an opportunity to listen to. Here the question concerns mostly sound differentiation, yet examples like this and 'motherese' in general give some evidence about individual differences related to social learning theory. Researchers in general seem to agree that the learning opportunities offered by the mother are important determinants for the later verbal behaviors of the children (see e.g. Karmiloff-Smith 1979, 1986; Robinson 1984; Siegler 1986). One may add that the opportunities 'symbolic' mothers offer their children in the mother tongue development, are available in foreign language learning at school if poor performers use simplified language codes in their self-generated elaborative practices.

This kind of practice also agrees with the research evidence that children learn most efficiently from input just beyond their current level of understanding. Generating short sentences, questions and answers as well as short, simple dialogues from the very beginning of foreign language studies might be an ideal learning experience for poor as well as for other learners. Instead, a common practice for young children is to produce the studied text, to answer the teacher's questions, and to fill in different kinds of gaps. Practicing communication abilities in the target language also gives a natural basis for studying structures needed in the actual context.

Children's and parents' strategies for communicating are clearly successful in overcoming the children's limited early capacity for processing language. In these strategies the simplified input and the learner's active role are crucial. It would only be natural to apply the same strategies to foreign language learning. Applications of these principles especially to mother tongue learning, but to some degree to foreign language learning as well, have been developed by Laurinen (1986, 1989, 1990).

Children's own questioning is generally considered to be of vital importance for their cognitive development, especially for developing reasoning abilities. In fact, asking questions is one of the most powerful tools of learning for children (see e.g. Karmiloff-Smith 1979; Brown & al. 1981; Siegler 1986). This fact has repeatedly been successfully applied to remedial teaching by Palincsar and Brown. They also claim for excellent long-term results (see e.g. Palincsar & Brown 1984; Brown & Palincsar 1989). The experiments of Palincsar and Brown show that children differ considerably in their ability to ask questions, and especially relevant questions. Training children to ask questions and thereby acquire knowledge is crucial for all learning, and even more so where communicative foreign language learning is concerned.

10. A corollary of basic factors affecting foreign language learning

In the previous sections it has been shown that foreign language learning is a very complex process. One can assume that the learning outcome is determined by a complicated interaction between certain conceptual mediators (e.g. conceptual level) and information processing strategies (e.g. verbal and nonverbal reasoning). There are also social, cultural, emotional, and biological factors in the interaction.

There are no sure procedures for isolating the different factors which influence the learning outcomes of different pupils. Here lies one of the reasons why it is extremely difficult to do research in a real classroom situation, especially so when long-time teaching is concerned. When we are aware of this, we probably also react with sound scepticism if somebody claims to have found *the* method to solve the problem of learning difficulties.

Figure 20 on the following page is meant to show how some basic factors interact to determine the foreign language learning outcome. It may seem astonishing that the teacher is not defined as a factor in this model, although there is probably a general agreement that the teacher must be regarded as one of the most important factors for the learning outcomes of the pupils. The reason for this seeming omission is that in this model the influence of the teacher is included in several factors, especially in cognitive, social, and emotional factors.

It is self-evident that one of the most important tasks of any teacher is to stimulate the cognitive processes of the pupils by engaging them in tasks that necessarily require effective information processing. In practice this means such procedures as deep-level processing and self-generated elaboration, as explained in detail in Section 8.11. As for the importance of social and emotional factors in a learning situation, this has been treated extensively in Sections 6, 7 and 9.

When poor performers are concerned, one can assume that it is more necessary than ever for the teacher to stimulate the cognitive development of the pupils in as many ways as possible. With these learners the teacher is probably an even more important factor than when working with other kinds of pupils. In our teacher education cognitive procedures should perhaps be emphasized more than has been done so far.

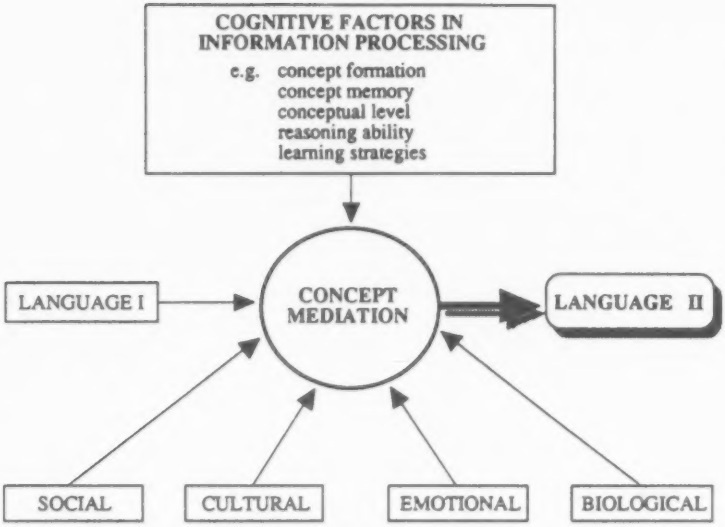


Figure 20. Basic factors affecting foreign language learning.

PART B

11. The main experiment

In the preceding sections theories, approaches and factors related to language learning have been discussed. A theory that could explain poor performance in foreign language learning is still far beyond our reach. Very little research has been done in this field, maybe due to the difficulty of the task. No theory so far proposed for foreign language learning even tries to explain failure to learn.

In the absence of a theory that could explain or at least describe poor performance in foreign language learning, we have to concentrate on factors that have been found to be connected with it. In order to improve a child's ability to learn, the teacher must know how the child's mind works. The concern of the teacher cannot only be the content of the subject he is supposed to teach, it must also include the learner. Knowledge of the principles of mental development and of individual differences and their causes is essential for both teaching and learning. *The learner and the learning process are inseparable*. It is through the learning process that we acquire changes in our behavior. In the preceding parts an attempt has been made to explain how this learning process is different in different individuals. What the learning process itself actually is still remains unanswered.

11.1. Problems and design of the experiment

As far as the investigator knows, no attempt has been made to employ a systematic intensive remedial teaching program in order to find a reliable answer to settle the issue of poor foreign language learning outcome. The main purpose of the present study was to find out the effect of long-term intensive remedial teaching on foreign language learning outcome under two conditions: mixed ability and separate ability groups. The remedial teaching was based on the principle of inferential elaboration, found to be useful especially for poor performers, and on the 'Conceptual Matching' theory. The foreign language studied in the experiment was Swedish. On the basis of the theoretical framework the following problems were formulated:

1 a) Can the poorest performers in foreign language learning be given adequate help through extra teaching?
  b) If so, do they profit more if they are taught together with average and good performers? *or*
  c) Do they profit more if they are taught in a group of their own?
  d) If there is an improvement, does it have a lasting effect?

2 a) Is the foreign language learning outcome related to the conceptual level of the pupils?
   b) Can the conceptual level of poor performers be improved by long-term intensive remedial teaching given in accordance with their conceptual level?
3 Is foreign language learning related to reasoning ability?
4 Does the cognitive style of the poor performers differ from that of the good and average performers along the field independent/field dependent dimension?
5 Do the poor performers differ from the average and good in their foreign language learning strategies, their attitude towards school and their hobbies?
6 Are some social background factors of poor performers different from those of average and good performers?

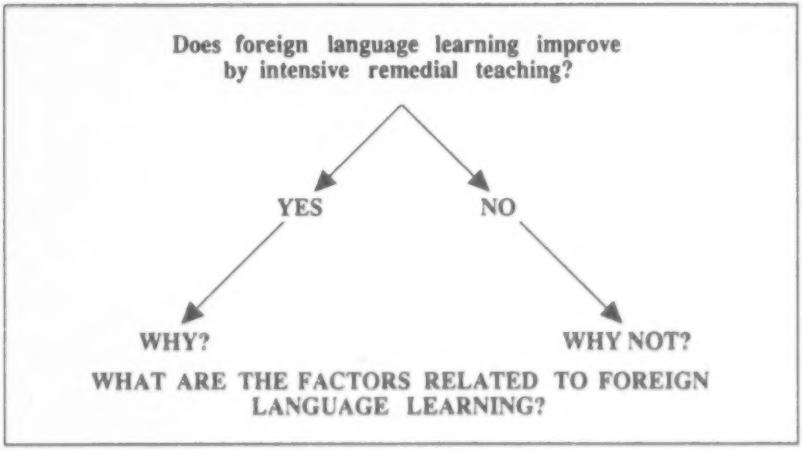


Figure 21. The main problems of the study

To find an answer to the above questions an experiment was designed in accordance with trend analysis (Edwards 1971, 271). This design was used to study the trend of means during successive tests. The design included repeated testing of the same subjects in the experimental and non-experimental groups. With varying intervals, all pupils studying Swedish were given four language tests (T1, T2, T3, T4). See Figure 22 for the scheme of experimental progress.

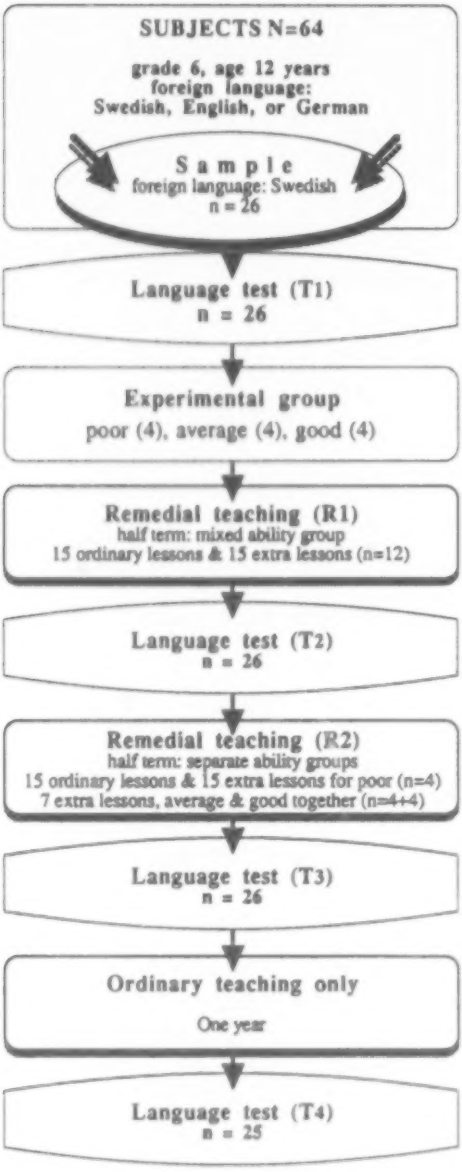


Figure 22. The progress of the experiment

The experimenter, being a language teacher and a teacher educator herself, designed an experiment in which the poor performers were given a course of remedial teaching under two different conditions: together with the same number of average and good performers, and in a group of their own. She gave the remedial teaching herself, as no other person was available to give about 40 hours of teaching, and in addition the same amount of testing and interviewing, without any compensation. No economic help was available.

The teaching was planned to follow the regular schedule of the classes. At first, all the pupils of the experimental group would be together (the mixed ability group condition). Then the poor performers would be given another sequence of remedial lessons separately, while the average and the good performers would be together. The effectiveness of the remedial teaching under the two conditions could then be measured by giving the pupils the language tests (T1 before the start of the remedial teaching, T2 when teaching in the mixed ability group was over, and T3 after the teaching in separate ability groups). In addition, a fourth language test - T4 - was given a year later, in order to find the stability of any improvement achieved.

On the basis of the first test given to all pupils studying Swedish, three relatively homogenous groups — with four pupils in each — were set up. These twelve pupils, four poor, four average and four good performers, formed the *experimental group*. It was not possible to form a similar control group that would have had the same teacher as the experimental group, as the number of very poor performers in each class was too small. However, the trend among the rest of the pupils studying Swedish, the ones not getting remedial teaching, was observed. This group will be called the non-experimental group.

The foreign language tests were given to all the pupils in both groups at the same time. The three sub-groups of the experimental group are called poor, average, good. T1, T2, T3 and T4 stand for the first, second, third and fourth test (score), respectively. R1 stands for the first period of remedial teaching (mixed ability group), R2 for the second period (separate ability group).

The first foreign language test (T1) was followed by the first period of intensive remedial teaching (R1). This lasted for seven and a half weeks, in which 15 lessons were given under the mixed-group condition. At the end of this period the second foreign language test was given (T2). Then followed the second period of intensive remedial teaching (R2), in which all lessons were given under the separate-group condition: the four poor performers were taught together (15 lessons), the average and good together (only 7 lessons). At the end of this period the third foreign language test (T3) was given.

In order to find out whether the intensive remedial teaching would have a long-lasting effect on the foreign language performance, a fourth language test (T4) was given one year after the end of the remedial teaching.

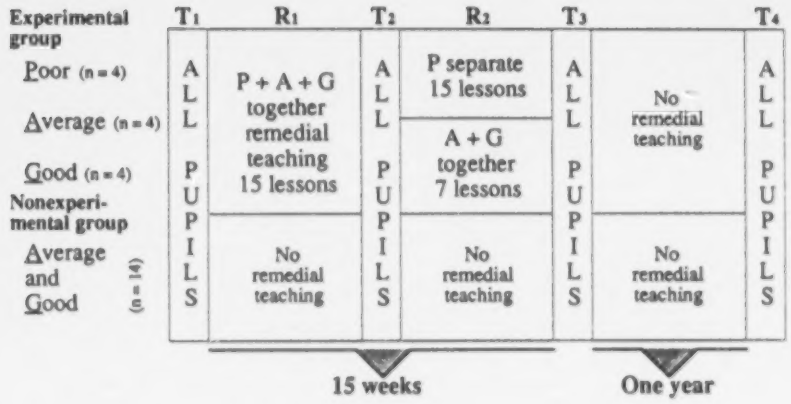


Figure 23a. The design of the remedial teaching (R) and the language tests (T).

The second problem concerned the relationship between foreign language learning and the conceptual level of the pupils. This was explored with the help of Hunt's Conceptual Level test, which was given to all pupils participating in the experiment. It was also given to all other pupils in the same grade (N=64). The assumed possibility of improving the conceptual level was dealt with by testing the experimental group with the same test before and after the remedial teaching period. By comparing the two sets of conceptual level scores, any change would presumably be detected.

To find out whether there is a relationship between reasoning ability and foreign language learning Raven's Progressive Matrices test was used. Field independence/ dependence (FI/FD) was studied with Witkin's Group Embedded Figure Test (GEFT). Both tests were given to all pupils in grade six (N=64).

The pupils' foreign language learning strategies, attitudes to school, and social background were investigated with the help of questionnaires, interviews, and case techniques.

Definitions of the terms used in the experimental investigation

Poor performers

In the experiment, by 'poor performers' is meant the group of four pupils who at the beginning of the experiment scored so low both in the comprehension and the production test that they on average could not understand a message given in the foreign language nor make themselves understood — not even when so easy grammar and vocabulary were used that all the others understood practically everything and made themselves understood very well in most expressions. Defined in this way the poor performers (n=4) were 15.4 % of all the pupils in grade 6 studying Swedish (n=26). They also had the lowest grades given by their Swedish teacher.

Average performers
By 'average performers' is meant pupils who scored lower than the best third on the first language test, but who on average could understand the message very well and also make themselves understood.

Good performers
By 'good performers' is meant pupils who belonged to the best third of the classes, as measured by the grades given by the teacher and by scores obtained in the language test.

Remedial teaching
By 'remedial teaching' is meant extra teaching in the foreign language, given in small groups for fifteen weeks. During nearly the whole term, then, the poor performers got twice as many Swedish lessons as usual.

Conceptual Level (CL)
By Conceptual Level is meant the test score each pupil obtained in Hunt's PCM-test (Paragraph Completion Method test). The test score shows the pupil's need of structure in teaching (Hunt & al. 1978).

Reasoning ability (Abstract/nonverbal intelligence)
By reasoning ability is meant the test score of each pupil on Raven's Progressive Matrices test. A person's total score shows his abstract intellectual capacity in terms of inductive and analytical reasoning (Raven & al. 1983).

Field Independence/Dependence (FI/FD)
The cognitive style FI/FD was measured with Witkin's test GEFT (Group Embedded Figure Test, Witkin & al. 1971). A high score in the test refers to field-independence, a low score to field-dependence. Field-independence has been linked with success in foreign language learning as well as with success in other intellectual tasks, while field-dependent people presumably show greater skill in interpersonal relationships (e.g. Witkin & al. 1971; 1977; Hansen & Stansfield 1981).

11.2. The nature and scope of the experiment

The investigation was based on a field experiment. Purposive sampling was used, as the objective of the experiment was to obtain samples of pupils differing in their foreign language achievement.

Case-study method was used because each class has only very few really poor performers, some none at all. In addition, they are usually utterly unwilling to stay on after school for extra teaching. As a matter of fact, it is among the poor performers that most of the pupils are found who do not attend school regularly. In this study the poorest performers, for half a school year, very often had to stay on at school after the other pupils had gone home.

A case study gives information that is difficult to get in other kinds of experiments. In the present experiment oral and written tests, questionnaires, different kinds of interviews with the subjects, and school reports from several years were used. In addition, the headmaster of the school, the classroom teachers and the language teachers of the pupils could be interviewed, as well as the pupils' parents, peers and friends. Especially where learning difficulties are concerned it is not advisable to rely only on information given by the students. It is not easy for average pupils to give completely honest and reliable information about their working habits or attitudes, and much less so for persons who almost daily feel they are failures.

Under the circumstances, it was considered an asset that the experimenter knew the pupils fairly well, but on the other hand was not responsible for giving them grades. She had been watching their performance in the foreign language during the three and a half years they had been studying it. This was due to the fact that she had visited the classes more or less regularly to observe lessons given by teacher trainees, so that a kind of rapport had developed between her and the pupils. Being in touch with the classes for several years had also given her an opportunity to notice the gradual decline in the learning outcomes of some pupils, as well as the corresponding decline in their motivation.

In the experiment, the amount of extra teaching was equal to the classroom teaching the poor performers were getting, so that *they doubled their number of foreign language lessons for a period of 15 weeks*. In addition to organizing the teaching differently for *poor* performers — in a separate ability group and in a mixed ability group, efforts were made to find the possible effect of extra teaching on good and average performers as well.

For the experiment it was first necessary to find out whether the poorest performers could produce anything understandable at all in the foreign language. This was done in an oral pretest. The difficulty level for the first test to be used in the experiment was based on the knowledge obtained in this way. A detailed description of all the foreign language tests is given in Section 11.4.

Swedish was the foreign language of the experiment for two reasons. All pupils in Finland have to study Swedish both in the junior and senior high schools. If it has been chosen as the first 'foreign' language, it is also studied for four years in the elementary school. The other reason for choosing Swedish was that the experimenter had been training foreign language teachers for twenty years, and also taught Swedish and English at different levels, and observed that poor performers find Swedish easier than English.

The purpose of the experiment was to see what can be learnt provided the conditions for learning are ideal: when the language chosen is not supposed to be too difficult for the poor performers, and when the person giving the remedial teaching is qualified and experienced. If there was no improvement in the foreign language of the poor performers under these circumstances, it could be assumed to be even more difficult to improve their performance under less favorable conditions. On the other hand, in case of improvement some guidelines might be given for teaching poor performers.

11.3. The sampling and grouping of the subjects

Initially, all the 64 pupils from two classes - 6A and 6B - in a suburban primary school were taken as the sample for the study. As it was possible to give remedial teaching in only one foreign language the pupils with Swedish as their foreign language were chosen for the experiment. The other pupils studied English or German. There were 26 pupils studying Swedish, 10 boys and 16 girls. They had studied Swedish for three and a half years when the experiment started, two lessons a week, and were now 12 - 13 years old.

All 26 pupils were given a Swedish language test (T1) which had two parts: comprehension and production. On the basis of the test results an experimental group of twelve pupils was formed. In it were four pupils who got minimum marks in the test, very much lower than all the other pupils. Four other pupils were chosen among those having average test results, and four pupils among the top performers. The grades given by the Swedish language teacher in the last school reports of the twelve pupils corresponded with their test results. All the pupils had had the same teacher since they started studying Swedish, except for a few months.

* * *

Until 1985 it was possible in the comprehensive school in Finland to choose between three difficulty level streams when continuing to study the first foreign language in grade 7. The A-stream was the most extensive and difficult, the B-stream somewhat easier, while only the very basic skills were taught in the C-stream. From the autumn of 1985 this streaming was abolished, so that poor, average and good performers are now taught together.

The change was preceded by extensive experiments covering several years. The purpose was to compare the learning outcomes of the two systems of teaching. As for the present research, the most important finding was that for the very poorest foreign language learners (Swedish or English) the learning outcomes were found to be better in the streamed system. (For a summary of the results see Peltonen 1984; Hämäläinen 1984; Hämäläinen & Takala 1985; Nikkanen 1986.)

After four years of foreign language studies the individual differences are considerable (see e.g. Takala 1984a; Kristiansen 1990). It is then very difficult for the poorest performers to follow the ordinary teaching because the vocabulary of the good performers is very much larger than that of the poorest performers in the same class. Therefore, in the present study the interest was in investigating whether the poorest performers would profit more from studying in a small mixed ability group or in a small separate ability group.

11.4. The foreign language tests

11.4.1. Rationale for the language tests

Effective evaluation requires properly made tests. Language testing cannot, however, be separated from language teaching: whatever has been taught should be tested. In the present study, attention then had to be given to what had been taught to the pupils concerned and how it had been done.

From the very beginning of their Swedish studies the pupils had primarily been taught to communicate: comprehension and the ability to express oneself were emphasized. The pupils would start a lesson by first rehearsing each other phrases, idioms and words in pairs, and after that asking each other questions about the text. This was done to ensure that they would understand and remember the words needed when acting the whole text.

From the very beginning they had also been practicing, both orally and in writing, how to elaborate the dialogues and other texts in their textbooks. After presenting the basic dialogue they would 'act' a modified or expanded version of it. If the text was not a dialogue, the pupils would retell the whole story from situational pictures especially made for the texts.

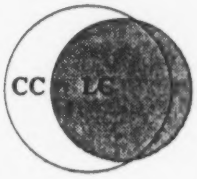
Communicative proficiency (mostly trained by pupils acting the text material in their text books and by generating their own 'plays' and acting in them) had been the most important object of the teaching. Poor performers, too, had always been allowed to take part, even if they could only make themselves understood by using easy content words. The grammar needed was beyond their capacity. Two pupils were also allowed to play the same part: if one did not know what to say, then the other might start talking. Naturally, grammar had been taught and practiced primarily in self-generated sentences which were needed for communication. This kind of teaching demanded language tests that would primarily measure communicative proficiency in the target language.

Whenever a new text was taught, the pupils had to translate the text or parts of it into their mother tongue in their exercise books. This was done instead of copying, as even poor performers can copy a text without making mistakes, and not understand a word of it. No structures commonly regarded as difficult or complicated had yet been taught, so that translating simply meant understanding content words in texts that were usually dialogues. Written exercises were done during every lesson, either on the blackboard or in practice books.

The following questions enable us to distinguish between two kinds of foreign language teaching:

1. Are we teaching language (for communication)? *or*
2. Are we teaching communication (via language)?

Allwright (1979) has presented a diagram to make us aware of the fact that teaching comprehensively for linguistic competence will necessarily leave a large area of communicative competence untouched. On the other hand, teaching equally comprehensively for communicative competence will necessarily cover all but a small part of the linguistic competence. According to Allwright's model, linguistic competence will automatically be included whenever communicative competence is tested.



CC = Communicative Competence
LC = Linguistic Competence

Figure 23b. Relationship between CC & LL (adapted from Allwright 1979, 168).

In *integrative-sociolinguistic tests* the emphasis is on the assessment of the total language proficiency, both comprehension and production. The term stems from psycholinguistics and sociolinguistics, and the approach is concerned not only with the ability to communicate in a given situation but also with the creative aspect of language use. This category of tests includes such 'global' tests as cloze procedure, dictation, open-ended questions, oral interviews, etc.

Cloze-tests, originally developed by Taylor in 1953, and dictation have usually been found to have a high reliability. It is, however, more uncertain how valid they would be as tests of communicative ability even if they have been found to correlate with for instance open-ended questions and oral interviews. Cloze-tests must primarily be regarded as tests of language proficiency. By giving them to a group of people under exactly the same conditions it is possible to assess the relative language proficiency levels of the members of the group, yet they do not necessarily prove a student's ability to use the language in natural situations. (For a theoretical background, use, and criticism of cloze tests see for instance Hellgren 1982, 1986; Raaz 1985.)

Answering questions, either in writing or orally, has often been used to measure communicative abilities. This does not, however, show how well a pupil can make himself understood when *asking* questions. Although this aspect of language use was of great interest in the present research, all the test types mentioned above were considered worth trying out among the poor performers.

Discrete-point tests seem to be of little value when the objective is to test communicative proficiency. Although they measure different components of language proficiency separately (vocabulary, structures, and phonology/ortography), one could say that the biggest difficulty with this kind of tests is constructing and interpreting them. Typical examples of these tests are multiple-choice tests. The command of grammar is often tested in this way. Yet the fact that the pupil recognizes the correct alternative

does not prove that he can produce or will use correct grammar in communicative situations (Schumann 1975; Spolsky 1978). Among the early critics of discrete-point tests can be mentioned Carroll (1961), Oller (1973), and Spolsky (1976).

Most foreign language tests, if well constructed, can rank the students in regard to the hypothesized language proficiency: the interest can be in knowing (1) what the student knows in absolute terms, i.e., what proportion of the material taught the student has learnt, or (2) how well he is doing when compared with his peers. The former kind of measurement is called criterion-referenced (domain-referenced), the latter kind norm-referenced testing. One could say that when testing a person's communicative abilities a solely norm-referenced measurement would sound sensible only when for instance selecting people for a certain job. The difference between the two kinds of tests is probably not so great.

In the present study, the interest was to see what the students could comprehend and produce in the target language, *but also to see how many of the pupils could not generally understand a message given in the foreign language, nor make themselves understood.* Considering the objective of the present investigation, a criterion-referenced test was a natural choice for the test type to be used. (For a detailed analysis of criterion-referenced testing see Takala 1985.)

When testing poor performers at a relatively low level of studies it is reasonable to ask first, before considering the final choice of the language tests: What performance are we to test? In obligatory foreign language studies the poorest performers have often internalized very little grammar, and at the same time their vocabulary is limited. When constructing a communicative test for them it might therefore suffice to consider the following aspects:

1. What are the contents we must test?
2. What are the performance operations that should be tested?
3. At what level of proficiency can we expect the pupils to perform these operations?

11.4.2. Pilot study before constructing the language tests

Prior to the present experiment several kinds of integrative tests, considered appropriate to measure communicative abilities, were tried out in different classes. The objective was to find a test that would allow even the poorest performers to show what they knew.

Both dictation and cloze test had to be left out for the following reason: the poorest performers could produce next to nothing when given these tests. They probably understood something, but then, noticing that it was very little, more often than not, either gave up completely and left an empty page, or filled in the gaps quite randomly. As the main purpose of this investigation was to find out *what the poorest performers could understand and produce*, this kind of tests would have been of little value and

were left out. Other researchers have made similar observations (see Takala 1984a). As the poor performers presumably understand something it would, however, be of interest to find out what these tests measure apart from understanding and production.

Very often poor performers are given some test type where they have to fill in gaps, a test type reminding of a cloze test. In the comprehension part the words are often given in random order, and in the production part the Finnish equivalent is given. This kind of test worked fairly well with poor performers, provided the gaps in the understanding part were not very frequent. This type of test was rejected after all because the main objective of the study was to see whether the poor performers could understand a whole message given in the target language or produce an understandable message. Tests matching questions and answers, as well as other matching tests, were also found to measure comprehension well but were considered too uneconomic in the sense that a lot of examples are needed to make inferences. Besides, poor performers are usually very slow readers.

Three other kinds of communicative tests were tried out before the final test was constructed. Very often tests are used where the students have to write answers and questions which are missing in a dialogue. This test type is often recommended and frequently used in teaching. With poor performers it works when answering questions, but not when it comes to constructing questions to given answers. It seems to be extremely difficult for a poor performer to figure out what kind of question would produce the answer, provided it is not of a very trivial construction. The causes behind this should be investigated, maybe the difficulty has to do with reduced or lacking reasoning ability. This kind of test would therefore have been unfair to the poor performers. Besides, it measures both understanding and production. The foreign language curriculum mentions *indirect translation, interpreting*, of the following type:

- Ask Tom how old he is.
- Ask him where he lives. Etc.

The instructions (Ask him, etc) in the test papers were given in the mother tongue. This kind of translation did not, however, work very well with the really poor performers. The reason was obvious: many of them were unable to change the indirect question into a direct one. Furthermore, for some of them it was difficult to leave out the beginning of the instruction.

During the trial period *direct translation* was also tried out. Translation concerned some important parts of sentences and complete short sentences. Translation has been largely avoided, maybe unduly so, in test recommendations after the discrete-point tests became popular. It has been regarded as a reminiscent of the old-fashioned translation method and been criticized by Lado (1961) and Rivers (1968), among others. In recent years, however, translation has been receiving new attention. Widdowson (1979), discussing the use of translation primarily for special purposes, argues that translation can be a very useful pedagogic device and have a potential utility for the teaching of foreign languages. According to him, the two main

objections to translation are not motivated. Firstly, it is said that translation leads the learner to suppose that there is a direct one-to-one correspondence of meaning between the sentences in the target language and the mother tongue. If, however, translation is carried out with reference to grammatical deep structure, as an exercise in establishing *semantic equivalence*, the objection is not valid.

The second objection, which is related to the first one, has been that translation focuses the attention of the learner on the formal properties of the target language sentences and distracts him from the search of contextual meaning. Yet, if translation is carried out as a practice in establishing *pragmatic equivalence*, it is not open to this objection, either. Widdowson concludes that 'semantic and pragmatic translation (unlike structural translation) mediated neutrally between the linguistic forms to which it relates: there is no 'direction' from one language to another since the translation is carried out with reference to conceptual patterns and social acts whose definition is independent of any particular linguistic structure.' (p. 67-68)

It is possible that a much closer correlation exists between the marks given for written translation and oral performance in the target language than what is generally supposed. Translation might thus be suitable at a fairly low level of performance where very simple vocabulary and structures are used. When poor performers are being taught, translation cannot be omitted in the classroom, either. All concepts cannot be conveyed with the help of situations, explanations, pictures and similar devices.

It has also been established that using the mother tongue when presenting the target language rules does not seem to interfere with the learning of the target language. A strong argument against using the mother tongue has then lost its importance. This statement is not meant, however, to support an extensive use of the mother tongue in foreign language classrooms. It only means that translation as a testing device seems to have certain advantages that have been overlooked. From the contrastive point of view the use of the mother tongue has always been acknowledged.

In spite of the arguments in favor of using translation as a testing technique, the appropriateness and validity of translation in language testing has been questioned. Lado (1961) points out that if translation is used to test speaking, the problem of face validity arises as translation is something different from speaking. Oller (1973) again points to research which has shown that when people translate from their native language into the target language, they make errors which are precisely analogous to the kinds of errors they make in spontaneous speech in the target language, and also do so when imitating long sentences in the target language.

From the above discussion the conclusion can be drawn that today there seem to be no serious objections to using translation as a test technique, especially in cases where there is no question of translating complicated structures. Hellgren's study in 1982 gives additional support for testing oral proficiency in written form. In a field experiment he tested the hypothesis of the unitary structure of English proficiency by means of a test in which oral and written responses were given, in a restricted time, to questions about the contents of interviews heard on tape. The subjects (N=406) were from ten senior high schools in Finland, drawn through stratified sampling.

The students were matched by means of a cloze test, and the matched pairs answered the same questions in the different modes, and changed their answering modes in the second part of the test. The oral answers were recorded on tape. Differences between written and oral answers were investigated by an analysis of variance. It was found that the same students who did well in the written part of the test also did well in the oral part of the test. There was no statistically significant difference between the performances in written and oral form for the same students. The hypothesis of the unitary structure of English proficiency was thus supported by the results. The test proved a reliable and valid instrument with an asset of simplicity. Intonation cannot be tested in this way, and pronunciation only indirectly.

11.4.3. The final choice and description of the language tests

On the basis of what has been discussed above it was decided to use partial translation in the final tests. During the trial period direct translation of certain parts of tests had been tried out, without causing any misunderstanding among the pupils. In the trial groups even the poorest performers could produce at least something when translating into or from the target language. Translation of partial and whole sentences were therefore included in the test, as well as some *creative items* of the following type:

- Where are you coming from?
- From a shop.
- What did you buy ? (Mention any three things you bought.)

The dialogue was to be translated from Finnish into Swedish, and the instruction in the brackets was given in the mother tongue. When translating as simple sentences as these there can hardly be any misunderstanding.

As a pretest all Swedish-studying pupils were interviewed orally. (An oral test as the final test was out of the question, as all pupils had to be tested four times in addition to all other tests they had to take.) On the basis of the oral test the difficulty level of the tests to be constructed was decided upon. In the oral test the pupils were asked to answer questions about the latest texts they had studied in their class. In addition they were asked to translate a few questions into the target language and then to answer them freely, preferably in the target language.

It was found to be very difficult indeed for the poorest performers to master grammar as well as vocabulary, while the test was very easy for most of the other pupils. To give the poorest performers a chance it was decided that all the content words to be used in the tests must have been repeated several times. In the production part only words recommended by the National School Board to be studied actively were to be used.

Each test consisted of two separate parts: comprehension and production. In the *comprehension* part the pupils had to give a free translation of some meaningfully important parts of the texts. The whole text was always a dialogue between two or more people in a situation mentioned in the curriculum, or a few persons' short descriptions

of themselves, their hobbies, friends, etc. In longer tests the pupils were not asked to translate everything. The whole context always helped them, however, to understand the message. The understanding parts of the tests were sometimes slightly longer than the expression parts, as everything was not to be translated into Finnish; yet, the parts that had to be translated were of about equal length and at the same difficulty level.

In the *production* part, the pupils had to translate dialogues consisting of complete short sentences into Swedish. Some creativity was included in sentences like: You were not at school yesterday. Why? Any sensible answer was accepted as an answer to questions like that. The pupils were quite familiar with these kinds of test items, and a short translation had often been part of their foreign language tests. (For the whole tests, see Appendix 3.)

Scoring the language tests

All the tests consisted of a comprehension and a production part, each with ten subparts, scored 0 - 5. Every subpart had five items, scored 0 - 1 each. The items were meaningfully important content words or phrases, chunks. The maximum score for each comprehension and production test was 50, and because every test consisted of a comprehension and a production part, the maximum score for each of the four tests (T1-T4) was 100.

The tests were made so easy that every poor performer would understand at least one sentence or part of it. It was obvious, then, that very many good performers would score nearly 50. It was found in the pilot study that any test of ordinary difficulty level was out of the question. No difficult items were included, the intention being to give the poor performers as many chances as possible. This was given top priority when constructing the tests.

The items consisted of vocabulary and structures one could expect even the poorest performers to master. This was made possible partly due to the pilot study, partly due to the fact that the foreign language teaching in the classes concerned had been observed for years. The emphasis was on understanding a message and expressing oneself understandably. Irrespective of the number of grammatical errors 3 points were given if the main idea of the sentence was understood. Using this as the scoring principle it was easy to see how often the main message of a sentence was understood. If most of the message was understood, 4 points were given, and 5 points if both the content words and the grammar were correct. Spelling mistakes did not affect the score if they did not distort the meaning. The topics were among those mentioned in the curriculum.

In the scoring of doubtful cases another Swedish teacher was consulted, and the score agreed upon. Due to the easiness and nature of the test there were very few cases where the scoring was not quite clear.

11.4.4. The reliability and validity of the foreign language tests

A test should be reliable and valid, otherwise its value is questionable. Reliability refers to the extent to which it gives consistent results. This concept of reliability underlies the computation of the 'error of measurement' of a single score, which enables us to predict the range of fluctuation likely to occur in a single individual's score as a result of irrelevant chance factors. For the present tests, Cronbach alpha and split half (odd-even items) reliability were used, as the same tests could not be repeated at different intervals in order to study the test-retest reliability. The very nature of the investigation was such that any kind of familiarity or practice effects could interfere with the independent variable to produce contaminated results. In other words, the pupils taking part in the experiment were supposed to learn more as a result of remedial teaching, so that retesting with the same test would have been futile. No equivalent form of language tests was available to be used for calculating that kind of reliability, the tests constructed being highly situational and unique, strictly based on the material learnt by the pupils.

The split-half reliability of the separate portions of the language tests calculated by the Spearman-Brown formula:

Comprehension		Production		Whole test	
Part of the test	r_{tt}	Part of the test	r_{tt}	Part of the test	r_{tt}
Test I	.91	Test I	.96	Test I	.96
Test II	.96	Test II	.96	Test II	.96
Test III	.98	Test III	.95	Test III	.94
Test IV	.88	Test IV	.96	Test IV	.97

With the help of Cronbach alpha interim consistency was obtained (Cronbach 1951; Kaiser & Michael 1975).The alpha coefficient values for the four tests were:

Whole test	r_{tt}
Test I	.94
Test II	.92
Test III	.96
Test IV	.96

Having constructed a reliable test, one is faced with the problem of validity, i.e., whether the test measures what it is supposed to measure. A test should have both satisfactory reliability and validity. All procedures for determining test validity are concerned with the relationship between the performance in the test and other independently observable facts about the behavior characteristics under consideration (Anastasi 1982). The classification of the types of validity used in this study is the one prepared by a joint committee of the American Psychological Association, the American Educational Research Association and the National Council of Measurements Used in Education. According to them, the three most important types of validity are: content, criterion-related, and construct. It is not necessary for a test to show all kinds of validity; rather, its purpose should determine what kind of validity is needed. It is usually considered acceptable if one external and one internal validity are quoted.

Content validity is determined by the question: Does the content of this measure represent the property to be measured? The contents of many achievement tests seem to be obvious, and so their content validity can be assumed (Kerlinger 1973). It is dangerous, however, to assume the adequacy of content validity without checking the assumption.

Keeping these precautions in mind each item of the tests was studied, and weighed for its presumed representativeness by two independent judges. The agreement between the judges was about 90%. Discrepancies were resolved by a third judge. The main objective of the language tests was to measure the understanding (comprehension) and expression (production) of the pupils, especially of the poor performers. The test items were chosen and structured on the basis of what had been taught and practiced in the classroom. It is reasonable to assume that the tests had a satisfactory amount of content validity.

Criterion-related validity is studied by comparing test scores with one or more external criteria known to measure the attribute under study. In the present case, the pupils' foreign language grade in their latest school reports was chosen as the external criterion for validating the constructed language tests. The grades were available at the time of the first test (T_1) and of the third test (T_3). The correlation between the pupils' test scores and the grades given by the language teacher was found to be 0.88 and 0.82, for the first and the third test respectively. These correlations seem to be reasonably satisfactory for the purpose of the language tests. The grades given by the teacher at the time of the fourth test, i.e., one year after the experiment, could not be used, as during that year the pupils had been following three different streams with varying difficulty and had got their grades according to the requirements set for each stream.

Construct validity is a broad and widely defined concept. Some writers present construct validity as purely subjective accounts of what they believe their tests measure. Generally, construct validity focuses on the desirability of basing test construct on an explicit recognized theoretical foundation (Anastasi 1982).

11.5. The other tests

11.5.1. Hunt's Paragraph Completion Method test (PCM)

The Paragraph Completion Method test PCM, developed by Hunt et al. (1978), was used to assess the conceptual level (CL) of the subjects. It is a semiprojective test in which the completion responses are considered to reflect how a person thinks. The test also measures interpersonal maturity as indicated by self-definition and self-other relations (Hunt & al. 1978, 3). According to Hunt, it also shows the pupil's need of structure in teaching.

The PCM test consists of six incomplete sentences. The subject is asked to complete them by writing at least three sentences on each topic. School children are allowed three minutes per item. The topics are:

1. What I think about rules ...
2. When I am critized ...
3. What I think about parents ...
4. When someone does not agree with me ...
5. When I am not sure ...
6. When I am told what to do ...

The responses are assumed to show how the respondent handles conflict or uncertainty, and how he thinks about rule structure and authority relations. In the instruction it is clearly told that there are no right or wrong answers, and that the subject should give his *own* ideas and opinions about each topic.The manual provides sufficient information to learn to score the PCM. In learning to score, one needs a clear idea of the characteristics of thinking at *different levels of conceptual development*. While scoring, the judge should remember the general definition of Conceptual Level in terms of:

1) increasing conceptual complexity as indicated by discrimination, differentiation, and integration,
2) increasing interpersonal maturity as indicated by self-definition and self-other relations (Hunt & al. 1978, 3).

A score from 0-3 is given to each of the six responses. After this the total CL score is calculated by averaging the highest three responses. The rationale for using the top three is that if a person demonstrates a high level of conceptual thinking on a few responses, he is not required to do so every time. The mean of all the six responses is, however, needed when one is concerned with identifying persons with scores below it. If there are fewer than three scorable responses the protocol is considered unscorable.

Although PCM can be used with post-secondary samples, the manual was developed *primarily* for grades 6-13. The reliability of PCM has generally been calculated by the test-retest method, as internal consistency indices are found to be inappropriate for CL-scores according to the manual. The rationale for this is the nature of the responses and that usually only three top scores, but in some cases six, are used. One year test-retest reliability coefficients are according to the manual between .50 - .56 (grades 7-11), and .67 for three months (college students). The manual summarizes the inter-rater reliability coefficients from 26 studies. The median inter-rater coefficient is .86. To provide construct validity for CL, intellectual ability has according to the manual nearly always been controlled, as well as classroom achievement.

In the present experiment the PCM was scored by the investigator and by another scorer trained by her. The inter-rater reliability was .94 (N=64). To the experimental group the PCM was given twice, at the beginning and end of the remedial teaching period. The correlation was found to be .96 (n=12). This confirms Hunt's claim that the conceptual level cannot be changed very quickly. According to him, two or three years are generally needed. The correlation between the PCM and Raven's Progressive Matrices test was .43. The values received in this study compare well with those in the manual: CL is not unrelated to other intellectual measures, but distinct from them. The correlations between CL and IQ measures are around .35 - .40.

11.5.2. Witkin's Group Embedded Figure Test (GEFT)

This test was used to measure the degree of field dependence/independence (FD/FI) of the pupils. As discussed earlier, this measure has been found to be related both to first and second language abilities. In this test, developed by Witkin et al. in 1971, the subject is required to locate a previously seen simple figure within a larger complex figure, which has been organized so as to obscure or embed the sought sample figure. The group test GEFT has been modeled as closely as possible on the individually administered EFT (Embedded Figure Test) with respect to mode of presentation and format.

The test consists of three sections. The first section is only for practice and contains very simple items. These items are not included in the total score. The score is the total number of simple forms correctly traced in the second and third sections, containing 9 items each. The maximum score is 18. The time allowed depends on the age of the subjects. The performance of the subject is supposed to reflect a person's ability to differentiate. A high score on the test indicates an analytic and a low score a global, non-analytic style of perceiving and processing information. According to the manual (1971), consistently high reliability and validity have been found.

The reliability of GEFT for the present sample (N=64) was estimated by computing the correlation coefficient between the two parallel sections with identical speed limits and correcting it by means of Spearman-Brown's formula. The value was .78.

11.5.3. Raven's Progressive Matrices test (SPM)

To measure the pupils' reasoning ability Raven's Progressive Matrices, Standard form (SPM) was used. The interest was in investigating the relationship between reasoning ability, especially inductive and analogical reasoning, and foreign language learning. According to the manual, the test measures a person's capacity to understand figures shown to him, see the relations between them, conceive the nature of the figures by completing each system of relations presented and, by doing so, develop a systematic method of reasoning (Raven & al. 1983, 2). It was developed in Great Britain by J.C. Raven in 1938 and has been revised in 1960 and 1983. It is completely language free, and is widely used as a test of nonverbal intelligence. (For a detailed analysis of different kinds of reasoning, see e.g. J. Leino 1981; Sternberg 1982; Johnson-Laird 1985; Pellegrino 1985.)

The test is regarded by many researchers as the best available measure of the g-factor in intelligence (Anastasi 1982). Raven himself stresses in the manual that it is always a mistake to describe it as a test of 'general intelligence', as has been done by numerous researchers, and that each problem in the scale is really related to a system of thought — hence the name 'Progressive Matrices'.

The evidence from factor-analytic research suggests that the test is not purely a 'g' estimate (Raven & al. 1983, 12). Although solving the problems of the test primarily requires analogical and inductive reasoning, memory is also involved. The Raven's Progressive Matrices test is often referred to as a test of 'abstract intelligence' because it requires reasoning without any verbal material included. Indirectly, however, language is involved when reasoning by oneself.

The scale consists of 60 problems/matrices, from each of which a part has been removed. The subject is shown an incomplete figure, and below the figure six or eight alternatives are given out of which he has to choose the correct one in order to complete the problem figure. The items are grouped into five series, each starting with an easy problem. All series have 12 matrices of increasing difficulty, but are similar in principle. The test is intended to cover the whole range of intellectual development. The earlier series require accuracy of discrimination; the later, more difficult series involve analogies, permutation and alternation of pattern, and other logical relations (Anastasi 1982, 290). A person's total score provides an index of his intellectual capacity.

The test is administered with no time limit and can be given individually or in groups. Simple oral instructions are required when handing out the sheets. At the beginning of the test the subjects are given a demonstration, and the first problem is solved. They are also asked to observe how the easy items are solved, as by doing so they will find the more difficult ones easier to solve.

One point is given for each correct choice, and the total score on the scale is the total number of problems solved correctly. By subtracting from a person's score on each of the five sets the score normally expected on each for the same total score on the scale, the consistency of his work can be assessed. The manual of the test (1983, 6-14) provides details of internal consistency, test-retest reliability and different kinds of

validity measures well established during the last 45 years. The test-retest validity for the age group 12 - 14 years, the object group of the present investigation, is according to the manual .88 (p. 8). The split-half reliability (odd-even items) calculated for the present sample (N=64) was found to be .85 after correction with the Spearman-Brown formula.

11.5.4. Wechsler Intelligence Scale for Children - Revised (WISC-R)

In order to measure the general intelligence (IQ) of the poor performers, Wechsler Intelligence Scale for Children - Revised (Wechsler 1984) was used. The test was given individually to all poor performers. The revised version consists of five basic tests on the verbal scale and equally five tests on the performance scale. In the revised version the verbal and performance tests alternate in order to avoid fatigue for either part, considering the length of the tests. The complete test consists of the following subtests presented in the following order:

Verbal Scale	*Performance Scale*
1. Information	2. Picture completion
3. Similarities	4. Picture arrangement
5. Arithmetic	6. Block design
7. Vocabulary	8. Object assembly
9. Comprehension	10. Coding

Raw scores on each subtest are first modified into normalized standard scores within the child's own age group. The scaled subtest scores are added and converted into a deviation IQ with a mean of 100 and SD of 15. Performance and Full Scale IQs can be found by the same method. A child's test age can be found by looking up the age corresponding to his or her raw score.

The Cronbach alpha reliability has according to the manual been found to vary for the age groups 10 and 14 between .77 and .94. Validity for the test is not given. A number of independent investigators have found concurrent validity coefficients between the earlier WISC and achievement tests or other academic criteria of intelligence clustering between .50 and .60 (Zimmerman & Woo-Sam 1972). The verbal scale tends to correlate higher than the performance scale with such criteria.

11.6. Other instrumentation

11.6.1. Interviews and questionnaires

All pupils from classes 6A and 6B were interviewed. Structured interview technique, based on the method adapted by A-L. Leino (1982) was employed. The information obtained (for details see Appendix 1) from all 64 pupils concerned:

1. Hobbies and academic ambition (Session 1, questions 1 and 2).
2. Attitude to school work (Session 1, question 3).

In addition, information about the social status of the parents was taken from school matrices. All the pupils studying Swedish as their foreign language were also interviewed about the following themes:

3. Motivation and responsibility in the foreign language studies (Session 1, questions 4-8).
4. Foreign language learning strategies (Session 2, questions 1-12).

If the answer was not quite clear, additional questions were asked. Answers were also cross-checked by other questions. (For details, see Appendices 1-2.) Scoring was done depending on the nature of the question. Session 1, questions 1 and 2: 0-3 points. Academic hobbies like reading books, but also going to the theatre/concerts = 3 points; specified sports, jazz ballet, going to movies, etc. = 2 points; watching TV, video films, reading but only comics, visiting friends, listening to pop-music only, etc. = 1 point. Academic ambition: any occupation requiring university studies = 3 points, only compulsory education = 1 point, and everything in between = 2 points. Question 3, attitude to school work: I find school very useful = 4 points, very little useful = 1 point. Questions 4-8 concerned motivation and responsibility in the pupils' foreign language studies. Scoring: questions 4, 5, 8 = 0-4 point each, questions 6, 7 = 0-3 point each.

All the questions in Session 2 concerned foreign language learning strategies. Questions 1-7 and 11-12 were scored 0-1, questions 8, 9, 10 = 0-3, because they all concerned text elaboration, including deep processing of the material.

The questionnaire contained the same questions as presented in Session 1. It was given to the pupils during the first weeks of the experiment, and the interviews were held a few weeks later. The pupils did not object to answering the same questions, maybe due to the fact that at the same time dermatoglyphic hand prints were taken of all pupils for a possible neurological analysis later. This procedure interested the pupils very much, they somehow connected it with the police and told each other: You'd better be honest!

A questionnaire without an interview was not considered satisfactory for the following reasons: poor performers are usually poor and slow readers, and poor text understanders. Therefore, it is not advisable to trust written information given by them. The correlation between the interview and the questionnaire was found to be .94, however. As for foreign language learning strategies, the pupils' foreign language teacher was consulted, so that their answers were controlled to some extent.

11.6.2. School reports and other material

For additional information, especially about the poor performers, their teachers, peers, parents, friends, the head-master, and the school reports during several years were consulted. (For a summary of the additional tests and other materials used in the progress of the experiment see Figure 24.)

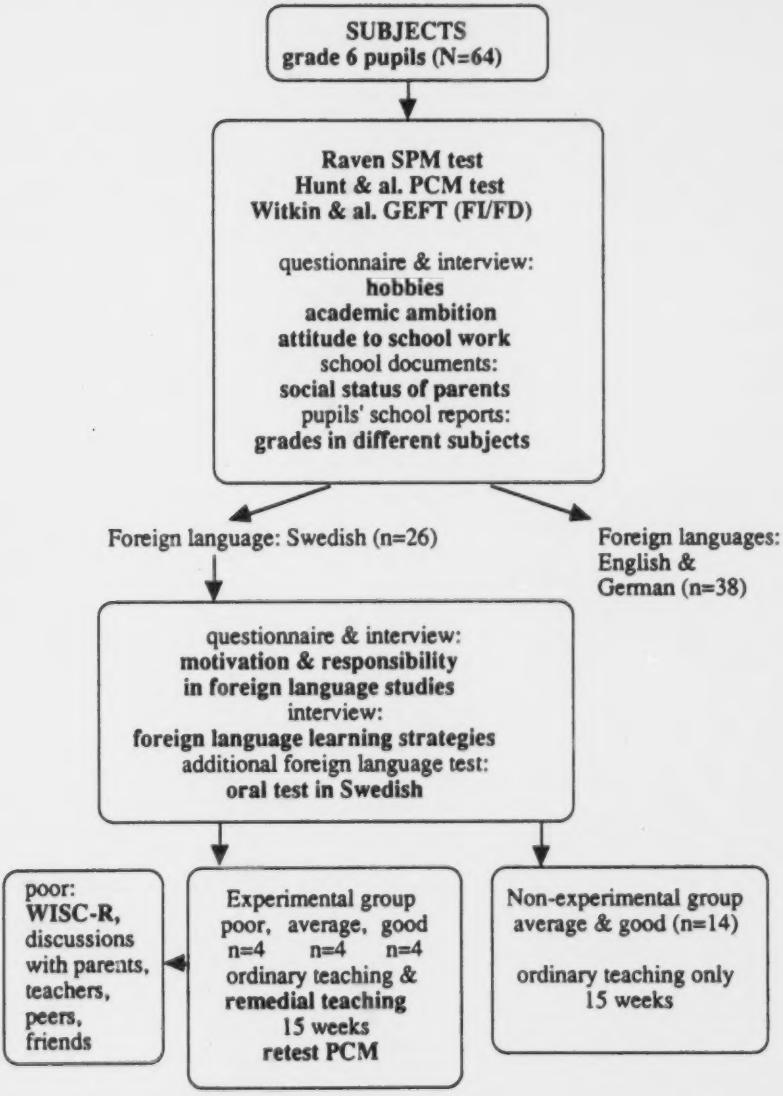


Figure 24. Additional tests and other materials used in the progress of the experiment

11.7. The remedial teaching

11.7.1. Planning the teaching and the material

Hunt (1971, 1975, 1979) suggests different kinds of teaching for pupils with different Conceptual Levels. The remedial teaching was planned in accordance with his suggestions. Pupils with a low CL are said to need well-structured teaching, while those with a higher CL profit more from less structured teaching, or structure is not important for them. Autonomous learning is thus more suited to high CL- pupils.

In the experimental group the mean CL of the good performers was 1.7, of the average 1.6 and of the poor 0.9. It was therefore assumed that during the period of mixed ability group teaching the good and average performers could work on their own part of the time, leaving the experimenter more time for the poor performers.

It was decided to teach all the twelve pupils together the first third of each lesson, the average and poor performers together during the second third, while the experimenter would spend the last third of each lesson only with the poor performers. When the other pupils were working on their own with differentiated teaching material, they could always ask the experimenter for help whenever needed. Each whole lesson lasted 45 minutes.

The basic texts could not be considered too difficult for pupils at this level, as all except the poorest performers could not only answer and ask questions about the texts, but also perform whole situations understandably. In addition they always modified and expanded the texts in their study books, and equally performed them by acting in front of the class. There was, however, no material in the text book only meant for very poor performers. Therefore, the texts had to be simplified by the experimenter and presented in that form when the teaching was concentrated on the poor performers. In order to understand what a text is about, the learner must know the meaning of 75% of the content words, and in order to understand the details, 95% (see Takala 1984a). At the beginning of the remedial teaching all the pupils chosen were keen on improving their foreign language proficiency and thereby their grades.

11.7.2. The contents of the remedial teaching lessons

The mixed-group teaching, three ability levels:
It was decided to treat the textbook material the pupils were having or would soon have in their class. Very soon it became clear that both the good and average performers were not only able to produce the basic texts, but also elaborate them. There were a few words they did not remember, but they had difficulties only in connection with grammar, although not too serious ones.

During the first third of each lesson the basic things in the text were discussed, dramatized, and treated in other ways. It was hoped that the poor performers might at least participate by interpreting in Finnish some expressions used by the other pupils or answer questions asked by the teacher or the other pupils. The detailed overhead

pictures were supposed to be of help, by making every text situation more concrete. Yet, this part of the lesson seemed to leave everybody unhappy. The good performers did not want to wait for the poor performers, whose reaction time was much longer than that of the others.

In addition, often the poor performers were not able to understand what was said, or unable to produce an answer in the target language. If so, they were encouraged to answer in their own language instead, but this did not very much appeal to them, either. They, too, wanted to make themselves understood in the target language.

During the whole remedial teaching period the same phenomenon was observed: the *poor performers were not happy only to try to understand, they also wanted to express their ideas in the target language*. In the course of the remedial teaching, the poor performers also started demanding to speak when it turned out to be far too difficult for them, i.e., when they after all did not know the words needed.

Everybody was happier when the teaching grew more differentiated, after about one third of the lesson. During the second third of the lesson the good performers elaborated the text further, and also wrote short essays. They were told to ask the teacher whenever they needed help, which turned out to be seldom, usually only once or twice during the rest of the lesson.

Additional oral practice for the poor and average performers together:
The average group now wanted to deal with the text in more detail. They either dramatized the basic text or an elaborated version of it. The poor performers were encouraged to participate whenever there was something easy enough to say in the 'play'. Mostly they were watching - but certainly listening. They said they were able to understand most of what was being said, and this may be partly true, because the players used gestures, mimicry, pictures, etc. to help making their message clear.

Nobody wanted the dramatization to be interrupted in order to translate the text into Finnish, nor to correct errors in grammar. If some error occurred frequently, it was given some attention afterwards.

After this the average performers prepared questions about the text for the poor ones to answer. Errors were corrected by the teacher. The poor performers were also encouraged to ask questions, but at the very beginning of the remedial teaching period this proved impossible because they knew actively only two or three question words: *vad (what)* and a couple of them also knew *vem (who)* and *vems (whose)*. Besides, they mastered very few content words actively, and practically no grammar at all.

The questioning went on as long as at least some kinds of answers were forthcoming, either in the mother tongue or even with one word in Swedish. Still, many questions remained unanswered simply because the pupils did not understand the questions. Answers in the mother tongue were always accepted but were not given by the poor performers as soon as they had heard other pupils answering in the target language. When unable to answer with a complete sentence, they preferred to answer with at least one word in Swedish. They then probably did not feel inferior all the time. This was also expressed in words: 'I don't want to speak Finnish, because the others speak Swedish!'

When dealing with very poor performers, teaching periods must be quite short and vary all the time. This was clearly noticed from the very beginning. The poor performers could not long concentrate on answering questions asked by their class-mates, nor by the teacher.

The next step was to find other ways to improve everybody's vocabulary. As the main text, and even the preceding one, had already been dramatized, elaborated, and treated with questioning, other ways to practice words were employed. Before the remedial teaching began both poor and average performers had expressed a special wish for oral training and were not very much interested in written work, except in writing on the blackboard. That was also often done in connection with the pupils' own questions and answers, and in connection with concept mapping.

Different kinds of word hierarchies were frequently made use of, and were well liked by the pupils. Concept mapping turned out to be popular, and efficient as well. As an example concepts connected with time can be mentioned, the Swedish equivalents for: year - month (January, February, etc.) - week (Sunday, Monday, etc.) - day - morning - A.M. - P.M. - evening - night. The words were also acted with mimicry and gestures when being said. The pupils themselves always suggested how each word should be acted. It seemed that what had been learnt this way was remembered by almost everybody for a long time.

Word games and songs were frequently included in the pupils' ordinary foreign language lessons. In order to check the comprehension and production of as many words as possible in a short time a new word competition game was planned together with the pupils. A few basic words were chosen. These words had already been practiced a lot in context as well as in isolation for correct pronunciation. The teacher either pointed to a picture, or said the Finnish equivalent when the word could not be presented with a picture. Anyone who knew the Swedish word was allowed to say it. The one who said the word correctly was then allowed to draw a short line in his notebook. This pupil was now out of the game as far as this word was concerned.

The word competition game was very popular among the average performers. This is easy to understand. They were now the best performers in the group, probably for the first time in their lives. The experience was not quite so pleasant to the poor performers, as it was easy for them to notice that they were always the last ones to learn the words.

The *keyword method*, developed by Atkinson (1975) for teaching foreign language vocabulary, was also tried. It consists of associating the target word with a word which is pronounced or spelt similarly in the mother tongue but is not necessarily related in terms of meaning. However, it was soon found that pupils of this age group could not use it (Pressley & Levin 1978). This is in agreement with Jokinen's findings later (1988). She found the method effective in higher grades, but for pupils one year younger than in the present investigation it did not improve vocabulary learning. Interestingly enough, some grammar could, however, be taught by using this device. This can be exemplified by a combination of the English auxiliary *can*, in Swedish *kan* + *a* > *kana*, the Finnish for a *hen* (*kan* takes the *-a* -form of the main verb). This helped the children to use the correct form of the main verbs after auxiliaries.

After oral practice together with the poor performers the average performers got some extra material for oral or written practice (vocabulary, discourse and grammar). They now started working in pairs or alone together with the good performers for the remaining fifteen minutes.

Additional practice for the poor performers:
The last third of the lesson was badly needed for the poor performers alone. The most important concepts in the text material had to be studied once again. As an example the first theme to be dealt with can be mentioned: A girl is falling ill, then taken to hospital to be operated. The text had already been studied in class, and the pupils had translated it into Finnish in writing. Therefore, understanding the concepts 'falling ill', 'taken to hospital', 'in an ambulance', 'being operated', 'getting home' was first checked. After that each concept was dealt with through elaboration, the pupils constructed sentences of their own containing these words. The boys, in particular, were interested in this because all kinds of sentences, even expressing aggressions, were accepted, something they were not usually allowed to. Then followed answering questions about the story, and practicing questioning in pairs.

As additional help there were clear, detailed overhead pictures of stories and dialogues as well as tapes. Also, there were extra exercises in the practice books. The chief aim was, however, to improve the pupils' ability to understand speech and to speak understandably. Therefore, most of the time was spent on oral work. Only frequent errors in grammar were corrected, whenever possible, by a fellow pupil. If all errors in grammar had been corrected, all the time would have been spent on doing so. As an example word order when making questions can be mentioned. They managed to use correct word order in cases where Finnish has the same word order as Swedish.

'True-or-false'-statements and 'multiple choice'-questions
The poor performers' vocabulary was very limited. To give them confidence and to show them that they really did know something at least, a lot of material had been prepared just for them, such as 'multiple choice' tasks about texts being studied as well as 'true-or-false'-statements presented both orally and in writing. This kind of exercises are often used for poor performers. This sort of material could not, however, be used many times. One of the boys very soon remarked that he was not learning anything: 'This is guessing, not learning!' He promptly refused to take part in that kind of practice. He had come there to learn, not to waste his time. He wanted to talk.

The pupils were encouraged to correct false statements and see why the information given was wrong. None of the poor performers enjoyed this kind of working. One explanation may be that they were all fairly slow readers, and in multiple choice tasks one has to read a lot. Reading in general, and especially reading different alternatives, simply did not interest them. None in the group of poor performers wanted to work alone with any kind of exercise. With crosswords and similar tasks they liked working in pairs. The poorest performer in the group was a girl, and she was always very much encouraged by the boys and also accepted as a co-worker.

The word-game repeated

From earlier experience the experimenter knew that everything to be learnt by poor performers had to be repeated over and over again. Therefore, the vocabulary that had been practiced in the word game together with the others was repeated when the poor performers were in a group of their own. Repeatedly during the first few lessons the teacher got the same surprise: it turned out that most of the words which the pupils had been able to produce only a few minutes earlier were already forgotten. It seems obvious that as far as poor performers are concerned, words practiced in isolation can be remembered for a very short time, but not be learnt. It was not possible to retrieve them from memory after some time lag, even if they had been practiced earlier in sentences similar to those in their texts.

Afterwards the words were always practiced with self-generated elaboration, in meaningful short phrases, in questions and answers, describing pictures, etc. In other words, the pupils always said something meaningful about the subject matter. If they knew the content words, the meaning could easily be understood although the gammar was not correct. Others were allowed to help spontaneously - and, in fact, they enjoyed doing so. This practice also included pronunciation practice of isolated words, both individually and in chorus. Especially long abstract words caused difficulties (see Baddeley 1986; Service 1988).

Written exercises for poor performers?

It would have been possible to let the poor performers do more written work than they did. This is done in many schools because working orally with those who can say very little is really hard. In writing they can be made to copy sentences and words, and do mechanical exercises, neither of which helps them. Programmed exercises are also often used with poor performers. They can then immediately check whether their answers are right or wrong. The problem is, however, that especially poor performers often simply copy the correct answer without even trying to solve the problem. The temptation to look at the answer immediately is too great to resist for those who have no inner motivation for the study.

At the beginning of the remedial teaching the poor performers could use a couple of question words, three at the maximum. Much the same was true about prepositions, pronouns, adjectives and adverbs (very few conjunctions are taught at this level). Verbs, nouns and some numerals were learnt and later remembered best.

It was tried, as described above, to improve the poor performers' vocabulary by letting them hear and practice a lot of material during the same lesson. No improvement resulted from presenting poor performers with sentences that had several — to them — new words. Presenting a lot of new material to poor performers has been mentioned as a possible way to improve their vocabulary. It seems fairly clear why this does not work at all in practice: if a sentence contains several semantically important words that are unfamiliar to the learner, the meaning of the sentence cannot be understood.

The kind of practice that led to improvement in learning

Schema-based elaboration

The learning model that resulted in some improvement can be called 'schema-based elaboration'. The same working principle was used in the pupils' ordinary Swedish classes. However, as explained above it had to be simplified due to the poor learners' performance level. The mother tongue also had to be used a lot more than in the pupils' ordinary foreign language groups.

To summarize, the following description will give a notion of schema-based elaborative practices:

1. From the very beginning situational conversations are taught. Texts can also be narratives, in this case for instance children's stories. Isolated sentences are not used; instead, at least a few sentences connected by a theme. Similarly, students do not generally answer questions presented by the teacher about the texts studied but make and present the questions themselves. After studying the text at home, they tell the class the story/narrative (or dramatize a dialogue/conversation) as a whole, with situational pictures or written words functioning as props. After this the learners modify and expand the text studied, and if the theme allows it, they dramatize it as well, or read it out if it is a story.

The teaching and learning of wholes, stories as well as dialogues, creates among the learners an interest to produce the same kind of language themselves. Instead of talking about motivation, it is here possibly better to say that expressing one's own ideas and listening to others, creates an interest in knowing what is being said. In other words, exchanging ideas, communication, becomes important.

2. New *vocabulary* and *grammar* are practiced *by elaborating*: The pupils make sentences of their own containing the new words and grammar, and gradually make longer and longer sentences and change different parts of the sentences.

The approach described above draws on the research results in the field of human memory (for details see Section 8.11.2.). This especially regards findings as to how average and poor performers not only learn but later also remember words and utterances, and gradually learn to produce longer discourse. Some basic principles of this kind of conversational practice were presented by Lado as early as 1964. The procedure also partly builds on experiments the present investigator was later able to follow at the University of Michigan, Ann Arbor.

In studies concerning verbal learning and memory it has been found that especially *poor learners* both learn and remember words better when they are practiced in meaningful contexts, not in isolation. A complete theme gives more cues both for elaborating a word, and for the retrieval of the word whenever needed.

As stated earlier, the poor performers were able to 'learn' a list of isolated words, in fact easily sometimes, but they were not able to remember them a short time later. This must be at least partly due to the poor processing of the words as well as to the minimum cues connected with the words at the time of learning — the absence of context.

The pupils in the experiment had already been studying Swedish for three and a half years. This meant that the texts could not possibly contain only very short sentences made up of words referring to concrete objects. Now abstract concepts in the foreign language had to be learnt, and longer sentences as well. With the poor performers, *in order for them to learn anything at all, the texts from their book had to be simplified* by the experimenter, and this to such an extent that in their new version they could not possibly have interested any of the average or good performers. It was necessary to go back to the kind of sentences used for beginners.

As material for practice the teacher then used shortened versions of the texts that the pupils were studying in their ordinary language course. The mother tongue had to be used quite frequently in order to make the meaning understood by all. Additional prompts were both needed and made use of all the time: pictures, written words, gestures, mimicry and, naturally, speaking and listening. In short, the more sense channels were used at the time of learning, the better the learning result, and the easier the recall when needed.

Usually, in a foreign language learning situation one or two senses are used at the same time. The procedure described demands attention, and involves at least four sense stimuli. This being a fact, little of the brain capacity is left for other purposes (e.g. daydreaming). When practicing a story or a play, short sentences are made into memory chunks: it is almost as easy to learn a certain amount of simple sentences as to learn just one word of each sentence. The sentences must, however, not be longer that the capacity of the short-term memory, about 7 ± 2 items (Ebbinghaus 1913/1885; Miller 1956).

When the experimenter started this kind of teaching, there seemed to be improvement especially in the students' vocabulary learning, and although complete short sentences were taught, even details used to stick better. This is in accordance with earlier findings (see e.g. Lado 1964).

The best learning result was obtained when the poor performers were able to modify or otherwise produce something in their own way. In a simplified text, though, the maximum that the poor performers were able to modify was two to three words per sentence. But they did want to try, and were happy to produce at least something with their own brains. Besides, not only did they learn better the material they had managed to modify themselves, but they even remembered it weeks, and in some cases months later.

An additional remark must be made: *chorus* had to be used a lot when practicing the basic things, not only words and sentences but even the whole texts. The advantage of saying something in chorus is that nervousness disappears, nobody needs to be afraid of mistakes and one gets more and more confidence in oneself each time the text is repeated. After lots of practice together, poor performers can be expected to improve. Therefore, extra practice in chorus is necessary, and well liked by the pupils.

Word categories causing additional difficulties

A lot of additional training was needed in addition to treating the texts. Particularly prepositions, question words, adjectives, adverbs, and long or infrequent nouns and

verbs needed extra training. There are at least two reasons for this. First, they are often more or less abstract concepts.

Examples of 'easy' adjectives are *old / new* (but not *young*). Of the prepositions *in / on / under*, 'in' was the easiest to learn, 'on' more difficult, and 'under' the most difficult of the three. Prepositions like *in front of* (Swedish *framför*), *behind* (Swedish *bakom*), *between* (Swedish *mellan*) turned out to be almost impossible to learn.

Another reason why it is difficult to learn words belonging to the groups mentioned can be that very often the main contents of a sentence can be conveyed to the listener without them. The group of pupils studied in this experiment consisted of children aged 12-13 years. Their everyday speech often concerns frequently occurring situations at school or at home: What are you doing? Where are you going? Where is...? Etc. Not even in their mother tongue do they frequently use abstract, complex concepts. Besides, one can very often make oneself understood by using incomplete sentences if the semantically important words are understandable: Where you go? I go school.

When practicing difficult language material, the following principles from the psychology of learning were applied:

Prepositions

1. Every pupil has a prompt phrase connected with the preposition in order to remember the meaning, for instance 'in my bag', 'on the table', etc.
2. The pupils grouped the prepositions according to their meanings.

Question words

1. A short question with an answer made by the pupil himself was used in order to remember the meaning of the word.
2. Question words were also grouped in order to make remembering easier, for instance Wh-questions: What? Who? Whose? etc.

Adjectives and adverbs

1. Opposites were taught together.
2. Easy sentences, made by the pupils themselves, were used as memory prompts.
3. Whenever possible, both adverbs and adjectives were played, acted, in the way the pupils suggested. Very often, the acting of a classmate or the teacher was enough to recall the meaning of a word. As an example can be mentioned the series: *in the morning - at noon - in the evening - at night*. The hands were held together, the palms of the hands against each other, and then moved in a big curve in the air, from left to right. The starting position on the left was 'in the morning'. Adjectives such as big/small, short/long/tall, heavy/light, round etc. are easy to act. 'Young' was acted by jumping up, 'old' by walking with the back curved.

Grammar

Poor performers cannot make very many errors in grammar as long as they have at their command very few words to make them in. (See Takala 1984a.) This was very clearly noticed in the present experiment. As soon as the pupils' vocabulary increased, errors

in grammar became more common.In this experiment the emphasis was on teaching the poor performers words with which they could express their own thoughts and ideas, i.e.,communicate. For that purpose very little grammar was needed, but a lot of words. During the first remedial lessons it was checked how much grammar the poor performers mastered. The answer was very simple: none whatsoever.

It turned out that all the time available would have to be spent on grammar if correct sentences were demanded every time the pupils said something, and when this was tried, the results were very poor. Therefore, only basic structures were practiced actively, such as word order in questions, nouns in the singular and plural, and correct tenses. Grammar was later, for the reasons discussed above, deliberately neglected to a certain extent. During the limited time at disposal it was important to reach some results appreciated by the pupils. It is to be noted that at this level of studies, the message is seldom completely distorted by errors made in grammar.

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The separate group teaching

The first half of the term, 15 lessons, was used for teaching in a mixed group, with the good, average and poor performers attending the extra lessons at the same time.During the second part of the term, the poor performers were taught separately as one group, and the good and average performers together. The poor performers continued getting remedial teaching two hours a week, while the others only had one extra lesson a week after the experimental group had been divided.

All the same principles as mentioned above were used in the teaching during the second half of the term, with the exception that the good performers, according to their own wish and initiative, started to write a play. This was finished later (during their ordinary foreign language lessons), and performed at school one evening with their classmates, teachers and parents as an audience.

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It was a positive surprise that during the whole term the pupils of the experimental group attended the remedial teaching classes very regularly - although the lessons were nearly always outside ordinary school hours. The behavior of all the pupils was without exception friendly and cooperative. This is remarkable, considering the fact that very often the lessons, especially for the poor performers, had to be given in small rooms that were not suited for teaching, and where it was not possible to listen to music, or use any audiovisual material.

11.8. Results

The main objectives of the present experiment was to study the effect of intensive remedial teaching on the outcome of foreign language learning. The data consisted of the scores of the experimental (n=12) and the non-experimental (n=14) group, on (a) the language tests T1, T2, T3 and T4, (b) the Conceptual Level test, (c) Raven's Progressive Matrices test, (d) the FD/FI test, (e) other cognitive and social variables. In order to analyze the data statistical tests (analysis of variance, t-test, and regression analysis) were used. In addition, some important observations were made on the basis of case studies concerning the four poor performers. Combining statistical analysis with a case study has some specific advantages, as statistical analysis and case study techniques supplement each other. Each of them views a given social situation from different angles, and each gives different emphasis to the social factor in the situation. A case study reveals the underlying factors of social processes and indicates their interrelations. Statistical study deals with relatively few factors, but will provide some scope by indicating extent, frequency, trends, and a degree of association. In different fields of studies, statistics can confirm or disprove the hypotheses, or determine existing correlation, more precisely than case data can. Statistics help to avoid drawing general conclusions from unusual or exceptional data. Statistical studies of human behavior can, however, be enriched and seen in a broader perspective if supplemented by individual case studies. In addition, the use of case studies - together with statistical treatment - reduces the danger which threatens those who limit themselves to describing human behavior in terms of what can most conveniently be measured, rather than in terms of what is really useful to know about behavior. Thus there exists a useful interdependence between statistical and case study techniques, whereas the exclusive use of any one of the two techniques could invite criticism because of the onesidedness of either technique.

The results obtained in the present study are presented in this chapter under four sections that deal with the analysis and results of the language tests, the cognitive tests, other background variables, and the case studies.

11.8.1. The foreign language tests

The scores obtained in the language tests of the experimental group on the three tests (T_1,T_2 and T_3) were analyzed with the help of analysis of variance and the t-test.In addition to the total language score analysis, the comprehension scores as well as the production scores (derived from the respective total scores) of the subjects were separately subjected to analysis of variance and the t-test. The analysis of the scores is presented in detail on the following pages.

11.8.1.1. Analysis of the total scores

The total scores obtained by the experimental group on the tests T_1, T_2 and T_3 were subjected to analysis of variance in order to find the significance of the differences between the means. A summary of the results is presented in Table 1.

Table 1. Summary of analysis of variance of the language scores of the poor, average and good performers.

Source of variation	Sum of squares	df	Mean square	F	p
Between groups	16955.72	2	8477.86	13.75	.01
Error	5549.63	9	616.63		
Between tests	363.79	2	181.89	15.12	.01
Groups x tests	250.49	4	62.62	5.20	.01
Error	215.56	18	12.03		
Total	23335.19	35			

From Table 1 it can be observed that the main group effect is significant. $F(2,9) = 13{,}75$, $p < .01$. The test of significance indicates that the overall measures of performance for the groups differ significantly. See Figure 25.

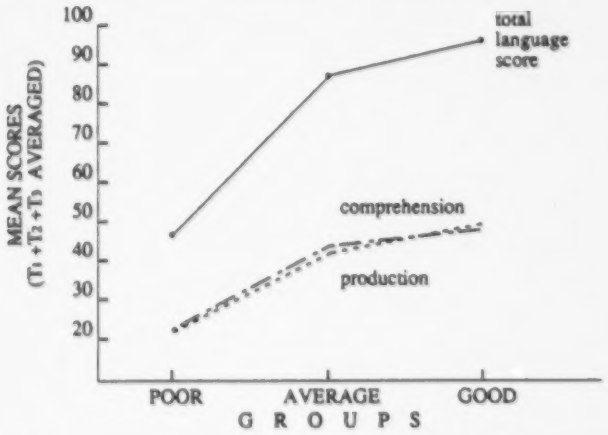

Figure 25. Mean language scores of the poor, average and good performers.

The mean total scores (T_1, T_2 and T_3 averaged) of the poor, average and good performers were 46.28, 86.33 and 96.75, respectively. The results obtained by employing the t-test are presented in Table 2. The table shows that the three groups differed significantly from each other in their total test scores averaged over the three language

tests, T_1, T_2 and T_3. Such results were to be expected on the basis of the earlier school performance of the subjects.

Table 2. Comparison of the total language scores of the three groups averaged over T_1, T_2 and T_3.

Groups compared	Mean	SD	n*	SE	t	p
Poor Average	46.28 86.33	23.30 4.93	12 12	6.84	5.84	.001
Average Good	86.33 96.75	4.93 2.16	12 12	1.55	6.77	.001
Poor Good	46.28 96.75	23.30 2.16	12 12	6.76	7.47	.001

* n=4 in each sub-group, but here it was averaged over the three tests, i.e. repeated measures were

The total test scores of the performance groups differed significantly, $F(2,18) = 15,12$, $p < .01$. The mean of the total test scores (poor, average and good combined) for T_1 was 73.5, for T_2 75.20 and for T_3 80.80. It therefore seems reasonable to conclude that the overall performance of the experimental group gradually improved during the period of intensive remedial teaching. See Figure 26.

The total mean scores on T_1, T_2 and T_3 were compared separately for the poor, average and good performers with the help of the t-test. The scores on T_3 were also compared with T_4, which was given one year after the end of the remedial teaching, in order to find out if T_3 performance had remained stable after one year of further studies without remedial teaching. T_4 as well as the other language tests, were given both to the experimental and the non-experimental group. The results of the experimental groups are given in Tables 2a and 2b.

There are no significant differences in the total scores (T_1, T_2, T_3 and T_4) in the group of poor performers. It can, however, be observed from Figure 27 that the poor performers had made progress during the whole period of intensive remedial teaching, especially between T_2 and T_3, when they were being taught separately from the average and good. The lack of significance is due to a very high variance among the poor performers (SD for T_1, T_2, T_3 and T_4 was 19.09, 22.7, 31.14 and 6.46 respectively).

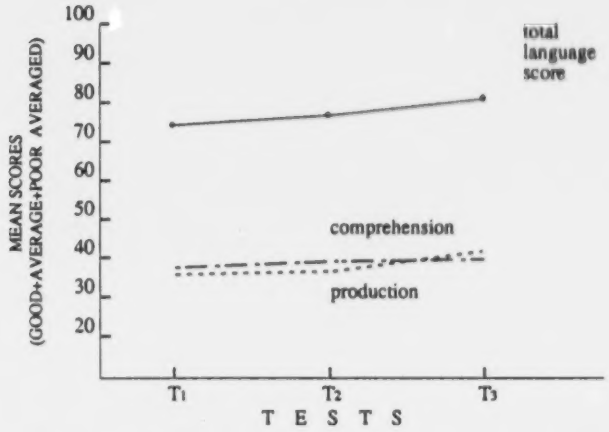

Figure 26. Mean scores of the experimental group on the three language tests.

Table 2a. Comparison of the total scores of the poor performers (n=4) on the four language tests.

Tests compared	Mean	SD	r xy	SE	t	p
T_1 T_2	41.00 43.25	19.09 22.70	1.00	2.09	1.08	n.s.
T_2 T_3	43.25 54.63	22.70 31.14	1.00	6.61	1.72	n.s.
T_1 T_3	41.00 54.63	19.09 31.14	1.00	6.98	1.95	n.s.
T_3 T_4	54.63 35.25	31.14 6.46	0.98	16.09	1.83	n.s.

The total effect of the remedial teaching is seen when T_3 scores are compared with T_1. As Table 2a shows, the total language scores of the poor performers had gone from 41 in T_1 to 43.25 in T_2 and to 54.63 in T_3. One year after the end of the remedial teaching, however, the mean of the total test scores fell drastically to 35.25 in T_4. See Figure 27.

Although the poor performers did improve definitely more in terms of mean differences ($T_3 - T_1 = 13.63$) than the average group ($T_3 - T_1 = 6.75$) the improvement in the group of poor performers was not statistically significant due to a very high standard error. Further analysis shows that in spite of the lack of statistical significance the poor performers had improved more during the period of separate group remedial teaching (R_2) than during the period of combined group teaching (R_1). The mean

improvement during R_1 was only 2.25 points, but during R_2 11.38 points. As we have seen, however, the poor performers deteriorated very steeply between T_3 and T_4, from the mean score of 54.63 to 35.25. In other words, *one year after the remedial teaching had ended all improvement was lost*, and the poor performers were back at about the same level as at the beginning of the experiment.

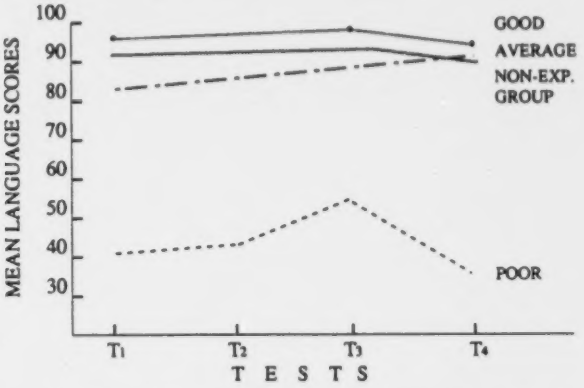

Figure 27. Mean scores of the three groups (poor, average and good) on the four foreign language tests compared with the non-experimental group.

During the first half of the experiment, the average performers were taught together with the poor and the good performers. During this period, i.e., between T_1 and T_2, this group did not show statistically significant improvement ($t = 0.89$, $p > .05$). As can be seen from Table 2b the improvement during the second part of the remedial teaching period was statistically nearly significant ($t = 2.89$, $p < .05$). During this time they were taught together with the good but separately from the poor performers. The total effect was statistically significant only at 0.5 level ($t = 2.36$, $p < .05$).

Table 2b. Comparison of the total scores of the average performers (n=4) on the four language tests.

Tests compared	Mean	SD	r xy	SE	t	p
T1 T2	83.13 85.86	3.66 5.22	0.32	3.08	0.89	n.s.
T2 T3	85.86 89.88	5.22 4.23	0.89	1.39	2.89	.05
T1 T3	83.13 89.88	3.66 4.23	0.22	2.86	2.36	.05
T3 T4	89.88 91.86	4.23 4.03	0.65	2.78	0.71	n.s.

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The mean of the total language test scores of the average group on T_1 was 83.13, on T_2 85.86 and on T_3 89.88. This means that except at the end of the remedial teaching period their scores were about twice as high as those of the poor performers, which were 41, 43.25 and 54.63 on the same tests. The mean of the total language test scores of the average group on T_4, which was given one year after the end of the remedial teaching, was 91.86. The corresponding mean of the poor performers was 35.25, showing a deep decline compared with the average performers, who showed some improvement even after a year. The means of the total language test scores of the good performers did not differ significantly on the four language tests. The mean of the total language scores of the good performers was 96 on T_1, on T_2 96.37, on T_3 98, and on T_4 94.25. That there was no significant change in their scores was about as could be expected as they had already scored very high on the first test. The foreign language tests had after all been constructed in order to focus on the foreign language learning of the poor performers, not the good ones.

A comparison between the foreign language test scores of the experimental and the non-experimental groups

The four language tests were given to both groups at the same time. The non-experimental group (n=14) consisted only of average and good performers. A complete statistical comparison between the two groups is therefore not advisable. Still it is of interest to see the general development in the two groups, as shown in Figure 28. On the whole, the experimental group did improve. The improvement between T_2 and T_3 - in the period when separate group remedial teaching was given - was relatively higher than between T_1 and T_2 - the period with mixed group teaching. This improvement in the performance of the experimental group is, however, followed by a fairly steep fall between the T_3 and T_4 - the year when no remedial teaching was given. As can be seen from Figure 28, the non-experimental group had also deteriorated during this year, but the curve is much less steep.

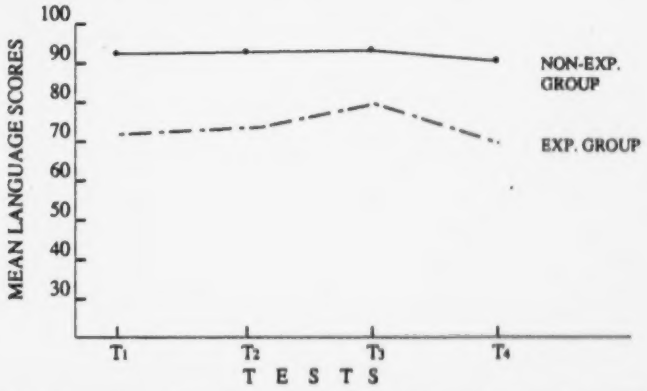

Figure 28. Comparison between the experimental group (combined scores) and the non-exprimental group on the four foreign language tests.

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11.8.1.2. Analysis of the comprehension scores

One of the important objectives of the experiment was to compare the comprehension and the production performance of the poor performers on foreign language tests and their relation to remedial teaching. The comprehension and production scores were therefore analyzed separately. The summary of the analysis of variance obtained for the comprehension scores of the three experimental groups - poor, average, good - is given in Table 3.

It can be seen from Table 3 that the main group effect F = 10.37, with 2 and 9 d.f., which is significant. The groups differed significantly in their comprehension scores.

Table 3. Summary of analysis of variance of the comprehension scores of the groups (poor, average and good) on T_1, T_2 and T_3 (n=4 for each group).

Source of variation	Sum of squares	df	Mean square	F	p
Between groups	4230.50	2	2115.25	10.37	.01
Error	1834.83	9	203.87		
Between tests	22.17	2	11.08	7.34	.05
Groups x tests	3.33	4	0.83	0.55	n.s.
Error	27.17	18	1.51		
Total	6118.00	35			

For the test (treatment) effect the obtained value of F = 7.34, with 2 and 18 d.f. ($p < .05$). This shows that the groups differed in their performance on the different tests. The mean of the comprehension scores for poor, average and good performers combined was 37.37 on T_1, 38.40 on T_2, and on T_3 39.33.

The mean of the comprehension scores of the groups, averaged over T_1, T_2 and T_3, was 23.29 for the poor, 43.5 for the average and 48.38 for the good performers. The results obtained by employing the t-test are presented in Table 4a.

Table 4a. Comparison of the comprehension scores of the three experimental groups, averaged over T_1, T_2 and T_3.

Groups compared	Mean	SD	n*	SE	t	p
Poor	23.29	12.89	12	3.75	5.38	.001
Average	43.50	1.58	12			
Average	43.50	1.58	12	0.47	10.38	.001
Good	48.38	1.62	12			
Poor	23.29	12.89	12	3.75	5.35	.001
Good	48.38	1.62	12			

* The n of each sub-group was 4, but here it was averaged over the three tests, i.e. repeated measures were taken.

The separate means of the comprehension scores for each group were subjected to t-test, and the obtained results are given in Tables 4a, 4b and 4c. The means of the comprehension scores of the poor performers were 22.5 on T_1, 23.5 on T_2, and 24.75 on T_3. One year after the end of remedial teaching, the mean comprehension score of the poor performers had gone down to 19.25 (T_4). A significant difference in the mean comprehension scores was found for the poor performers between the first and the second test ($t = 5.26$; $p < .01$). Although the means differed only by one point, yet due to the perfect correlation between the first and the second test, the obtained t was high. The result is, however, not encouraging, as an increased sample size is likely to reduce the correlation and hence the t-value, despite the fact that the standard error would be reduced in this case (see Table 4b).

Table 4b. Comparison of the comprehension scores of the poor performers (n=4) on the foreign language tests.

Tests compared	Mean	SD	r_{xy}	SE	t	p
T_1 T_2	22.50 23.50	13.48 13.80	1.00	0.19	5.26	.01
T_2 T_3	23.50 24.75	13.80 15.31	0.99	1.47	0.85	n.s.
T_1 T_3	22.50 24.75	13.80 15.31	0.98	1.98	1.14	n.s.
T_3 T_4	24.75 19.25	15.31 5.51	0.77	6.72	0.78	n.s.

As one can see from Table 4b, the improvement in comprehension of the poor performers was not statistically significant during the whole period of remedial teaching. It is important, however, to be aware that they then (T_1 to T_3) improved by 2.25 points. Yet, one year later (T_3 to T_4) they had deteriorated by 5.5 points. One must therefore conclude that the remedial teaching had had no long term effect on the foreign language learning outcome of the poor performers. See Figure 29.

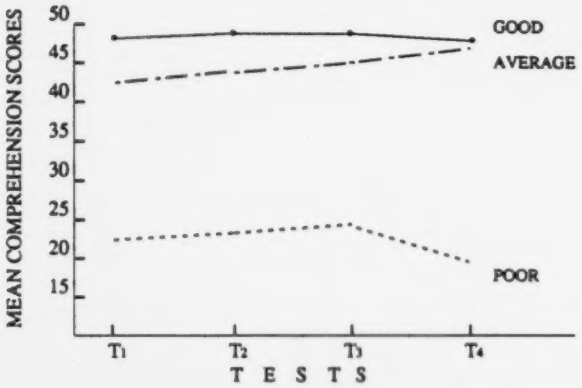

Figure 29. Mean comprehension scores of the groups of poor, average and good performers on the four foreign language tests.

Further analysis showed that the improvement in the comprehension scores of the average performers was not statistically significant during the mixed group remedial teaching ($T_2 > T_3$), and not during the separate group remedial teaching T_2 to T_3. The group did improve significantly, however, between T_1 and T_3, i.e. during the remedial teaching period as a whole ($t = 2.63$, $p = < .05$). See Table 4c.

Table 4c. Comparison of the comprehension scores of the average performers (n=4) on the four language tests.

Tests compared	Mean	SD	r xy	SE	t	p
T1 T2	42.5 44.0	1.73 0.82	1.71	0.74	2.03	n.s.
T2 T3	44.0 45.0	0.82 1.41	0.87	1.46	2.17	n.s.
T1 T3	42.5 45.0	1.73 1.41	0.27	0.95	2.63	.05
T3 T4	45.0 47.5	1.41 2.08	0.11	1.38	1.81	n.s.

The mean of the comprehension scores of the average group was 42.5 on T_1, 44 on T_2 and 45 on T_3. Further, it is interesting to observe that on T_4 the mean was 47.5. This shows that the *improving trend of the average performers continued after the remedial teaching was over.*

The group of good performers consistently scored high on the comprehension part of all the four tests. The mean of their comprehension scores on T_1 was 48, on T_2 48.75, on T_3 49, and on T_4 it was 48. Considering the maximum possible score of 50, this means that they had understood practically everything in all the tests. This, then, differs greatly from the scores of the poor performers, which shows that the latter usually did not understand even the main message expressed in the sentences. One has to bear in mind that the tests were designed to find out if there was at least something in the material taught that even the poorest performers could understand.

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When looking at the comprehension scores, the most important observation seems to be that although the group of poor performers improved a little during the remedial teaching period, they did not maintain the improving trend in the year after the remedial teaching. Instead, their performance had deteriorated. This indicates that if poor performers are to benefit from remedial teaching it is necessary to organize a continuous, efficient and intensive extra teaching for them.This in itself does not, however, guarantee a long term effect.

11.8.1.3. Analysis of the production scores

In order to analyze the scores related to the production performance of the three groups on the foreign language tests the obtained data were subjected to analysis of variance in the same way as the comprehension scores. A summary of the analysis of variance is presented in Table 5.

Table 5. Summary of analysis of variance of the production scores of the three groups (poor, average, good) on T_1, T_2 and T_3 (n=4 for each group).

Source of variation	Sum of squares	df	Mean square	F	p
Between groups	4282.17	2	2141.08	17.63	.001
Error	1093.25	9	121.47		
Between tests	213.00	2	106.50	6.61	.01
Groups x tests	128.33	4	32.08	1.99	n.s.
Error	290.00	18	16.11		
Total	6006.75	35			

Table 5 shows that the main test (treatment) effect was significant ($F = 6.61, p < .01$). The mean production scores of the groups differed significantly between the three different tests. The mean production scores of the three groups combined was 36 on T_1, 36.75 on T_2, and on T_3 41.5. It can be seen that the main group effect is highly significant ($F = 17.63, p < .001$).

Table 6. Comparison of the production scores of the three experimental groups averaged over T_1, T_2 and T_3.

Groups compared	Mean	SD	n*	SE	t	p
Poor	23.00	11.64	12	3.59	5.23	.001
Average	42.83	4.34	12			
Average	42.83	4.34	12	1.33	4.20	.001
Good	48.42	1.56	12			
Poor	23.00	11.64	12	3.39	7.49	.001
Good	48.42	1.56	12			

* n=4 in each sub-group, but here it was averaged over the three tests, i.e. repeated measures were

The mean of the poor performers (T_1, T_2 and T_3 averaged) was 23, of the average 42.83, and the good 48.42. The obtained mean scores of the three groups were further subjected to t-test. It can be seen from Table 6 that the three groups differ significantly from each other in their production scores averaged over the three tests.

Table 7. Comparison of the production scores of the poor performers (n=4) on the four language tests.

Tests compared	Mean	SD	r_{xy}	SE	t	p
T_1	19	5.05	0.99	1.80	0.56	n.s.
T_2	20	8.22				
T_2	20	8.22	0.97	3.82	2.62	.05
T_3	30	14.27				
T_1	19	6.05	0.97	4.93	2.23	n.s.
T_3	30	14.27				
T_3	30	14.27	0.22	8.06	1.74	n.s.
T_4	16	3.92				

As can be seen from Table 7, a significant difference appears between T_2 and T_3. The mean in the second test was 20 and in the third 30 (max. 50). The improvement of 10 points is shown graphically in Figure 30. *The production scores of three of the poor performers improved considerably during the period - R_2 - when they were given separate group remedial teaching.* During the mixed group remedial teaching - R_1 - the improvement had been only one point (from 19 to 20). As can be seen from Figure 30, the encouraging trend from the remedial teaching period did not, however, continue, as the performance of the group had deteriorated steeply one year after the end of the remedial teaching. Whereas the mean in T_3 was 30, it had dropped to 16 in T_4, which was lower than at the beginning of the remedial teaching (T_1 = 19). The remedial

teaching had no long-term effect on production, either. The whole improvement was lost during the following year.

It can be observed from Table 7 that the correlation between the production scores of T_3 and T_4 is low (r = 0.22), while it is very high between the other tests. The low correlation is due to the fact that the scores of three of the four poor performers went down very much, while the scores of one of them slightly improved.

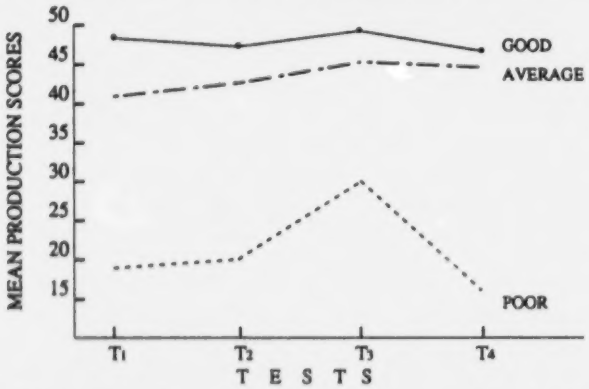

Figure 30. Mean production scores of the poor, average and good performers in the experimental group on the four language tests.

The mean of the production scores of the average group was 40.75 on T_1, 42.50 on T_2, 45.25 on T_3 and 44.75 on T_4. Perhaps not much improvement could be expected, as during the period of separate group teaching they got only half as much extra teaching as the group of poor performers.

Due to the very nature of the language tests used (specially made to suit poor performers) the scores of the good performers showed a more or less flat trend. The mean of the production scores of the good performers was as follows: on T_1 48.25, T_2 47.25, T_3 49.25 and T_4 46.50 (max. 50). Working more or less independently for one extra lesson per week did not result in any noticeable improvement in their performance.

11.8.1.4. Types of error in production

In the analysis of errors the term 'error' includes both wrong words used, missing words, and grammatical errors. The reason for counting missing words as errors is very simple: at the beginning of the remedial teaching the poor performers' command of even the basic vocabulary was so poor that they were hardly able to produce anything, usually only a few separate words of a sentence. It would then have made little sense to count only wrong words and grammatical errors, as there were very few words produced at all.

As can be seen from Figure 31 the number of errors made by each group was reduced during the period of remedial teaching.

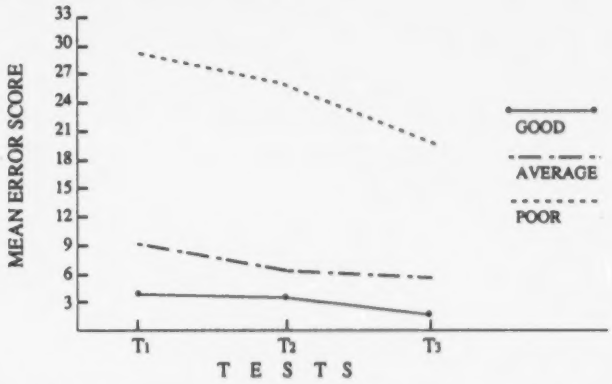

Figure 31. Mean error scores of the three experimental groups (poor, average and good) in three production tests.

Errors made in grammar at this level of proficiency seldom affect comprehension. Although it was not the objective of the present experiment to measure the amount of grammar learnt, it might be of interest to see what kinds of error were common in the different groups of performers. The results are shown graphically in Figures 32 and 33.

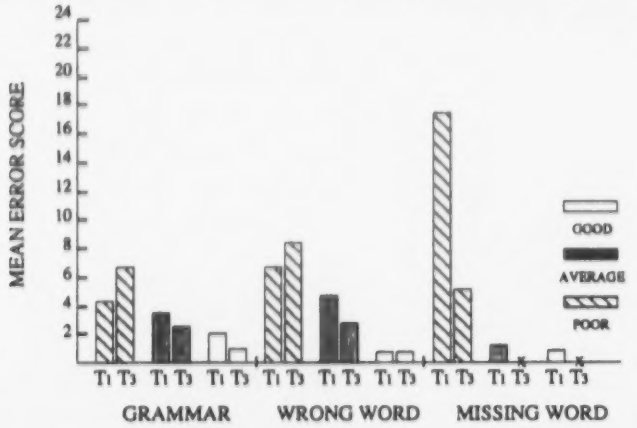

Figure 32. Types of error made by the three groups on T_1 and T_3 (wrong and missing content words separated).

Figures 32 and 33 clearly show that wrong and missing content words are the biggest source of error among the poor performers. This explains why the poor performers

scored extremely low on both the comprehension and production tests at the beginning of the experiment. A message can neither be understood nor produced if the words are unknown. Yet all the words used in the production tests were among those that everybody should learn to use actively. It had also been checked that all words had been repeated after their first occurrence both in texts and in exercises, often several times. The objective was to find out if the poorest performers could use at least the words that they had had an opportunity to practice several times. This did not seem to be the case.

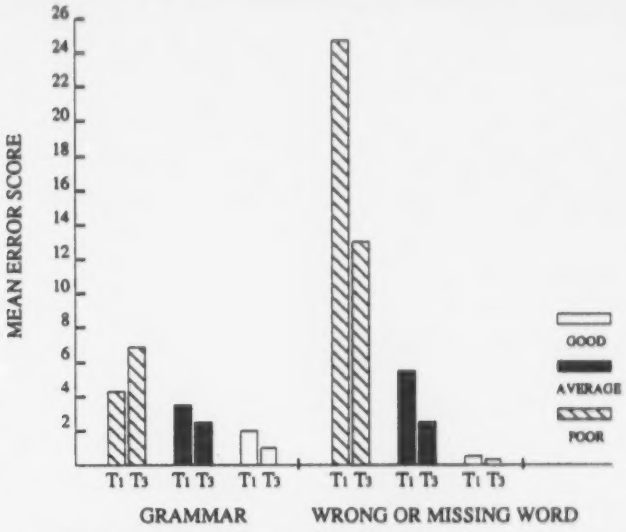

Figure 33. Types of error made by the threegroups on T_1 and T_3 (wrong and missing content words combined).

As can be seen from Table 8, the total number of errors in content words (wrong or missing) on T_1 among the poor, average and good performers was 99, 22 and 2 respectively. The corresponding means for the groups were 24.75, 5.5 and 0.5. The errors were fairly evenly distributed among the poor performers, with the exception of one girl whose performance lay clearly below the others.

The fact that the group of poor performers had fewer errors in grammar than in vocabulary does not mean that they were better in grammar. As pointed out earlier there is little room for errors in grammar if only a few words are produced. Instead, it seemed to be the case that whenever the message concerned could not be expressed through fixed phrases, errors both in morphology and syntax tended to appear. As can be seen from Table 8, the number of errors in grammar increased as the poor performers learnt more words. During the remedial teaching the group of poor performers succeeded in extending their vocabulary to a certain extent (the mean error score of the content words in T_1 was 24.75, in T_3 it was 13). The same does not seem to apply to grammar, although some time was spent on practicing grammar in every lesson.

Table 8. Types of error committed by the three groups of pupils before and after the remedial teaching.

Error category	Poor		Average		Good	
	T_1	T_3	T_1	T_3	T_1	T_3
Grammar	18	27	14	10	8	4
Wrong or missing content word	99	52	22	10	2	1

From Table 8 it can further be seen that as far as errors are concerned the reverse seems to be true of the good performers. They made hardly any errors in words. The number of errors in grammar was also very small, yet it was bigger than the number of errors in words, both at the beginning and at the end of the period of remedial teaching. This is somewhat surprising and a very interesting result, which reflects the kind of teaching the pupils had been getting for three years. From the very beginning the emphasis had been on 'acting', the good and average performers using their own modified and expanded dialogues, while the poor performers used their basic dialogues with probably a few easy modifications. The practice of old vocabulary in structural contexts was repeated regularly. This practicing of vocabulary in situational contexts cannot, however, be said to have affected the pupils' command of grammar in any way, as can be seen from Table 8. Instead, those whose command of the vocabulary was good did well in grammar as well, and vice versa. For the average group it can be noticed that it was easier for them to improve on vocabulary than on grammar, while for the good performers the improvement was the same on both.

Interference from the students' mother tongue has often been found to be a considerable source of grammatical errors. The results of this experiment, however, show that the only systematic error caused by mother tongue interference was the wrong word order at the beginning of sentences where Swedish takes converted word order but Finnish not. The nature of the test might cause this error. Yet, one should bear in mind that at all levels of studies this error is one of the most common among the Finnish learners of Swedish.

All errors in grammar were fairly evenly distributed, with no error type dominating. The different groups committed the same types of error, which mainly consisted of

- wrong form of noun or pronoun,
- wrong inflection of verb,
- wrong tense,
- wrong word order,
- slightly distorted expression.

Due to the nature of the tests all possible error types in grammar were not represented. A possible conclusion is that at this level of studies these kinds of errors are likely to occur for Finnish pupils studying Swedish as a foreign language, and that none of the

errors hindered comprehension in the present experiment. The similar things seem to cause difficulties for all students, only the amount of errors varies.

A close look at all the tests of the poor performers shows that they do not master any aspect of grammar taught to them, nor any infrequent or fairly abstract vocabulary. The results do not support the assumption that some people are good at grammar, some at vocabulary. For a summary of recent research evidence against any clear separate existence of vocabulary and grammar as components of second language proficiency, see e.g. Arnaud (1987) and Harley et al. (1990).

The curriculum emphasizes the importance of comprehension and production in given situations. For these reasons the language tests were designed to assess the communicative skill in writing. Hellgren's study (1982) showed that written and oral production were to a great extent manifestations of a unitary factor of language proficiency. That is, if you can write something, you can also say it understandably. This is also evidenced by the present investigation where all the pupils were tested orally in the pilot study and in writing several times. Those who were poor or good on the oral test of the pilot study were also poor or good, respectively, on the written tests of the main study.

Finally, one can make the general observation that fifteen weeks of intensive remedial teaching did not change the interindividual position of the pupils: those who were good, average or poor when the remedial teaching started belonged to the same categories not only when it ended, but also one year later. (For similar findings see e.g. Konttinen 1970.)

11.8.2. Cognitive variables and foreign language learning

The mean scores of the poor performers on the three cognitive variables were compared with the mean scores of the population, i.e., with all the pupils of the two classes. This population, including also the pupils studying English or German as their first foreign language, was thought to provide a kind of normative group. A test of significance between the mean of poor performers and that of their population was carried out, using small samples statistics. Significance tests against the norms of the population were thought to provide a more meaningful picture of the situation under the circumstances.

Conceptual Level

As can be seen from Table 9, the difference between the mean score of the poor performers (0.92) and that of their population (1.48; max. 3) was statistically significant only at o.5 level. Some pupils who had very low Conceptual Level among the whole age group (N=64) were, however, found to have scored high on the foreign language tests and had also been given good grades by the teacher.

The Conceptual Level of the experimental group was measured again at the end of the period of remedial teaching. There was not much change in the mean score, and none at all in the mean score of the poor performers. The results lend support to the

earlier findings of Hunt (1979) that CL is relatively stable and can be changed only after a few years of remedial treatment.

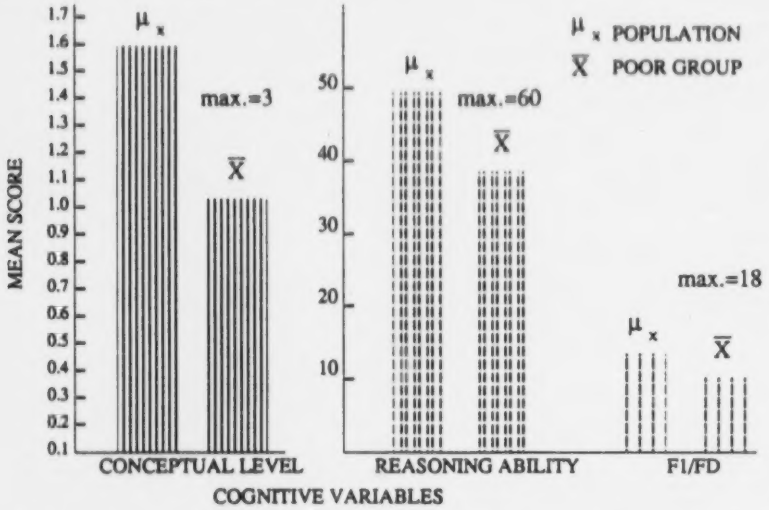

Figure 34. Comparison between the mean scores of the poor performers (n=4) and their population mean on Conceptual Level, Reasoning and Field Independence/Dependence tests (N=64).

According to Hunt, the teacher's Conceptual Level may have an effect on the outcome of teaching. Therefore, the CL of both the classroom teacher and the foreign language teacher was measured. They had both been teaching these pupils for several years. The CL of the teachers was found to be relatively high, 2.4 and 2.1. Persons with a high CL are supposed to be able to adjust their behavior to suit the needs of other people, in this case the pupils with a low CL.

Table 9. Comparison between the mean scores of the poor performers (n=4) and their population (N=64) on three cognitive variables.

Cognitive	Population mean	Sample mean	SE	t	p
Conceptual Level	1.48	0.92	0.225	-2.47	.05
Field Independence	13.62	11.00	2.1	-1.25	n.s.
Reasoning ability	49.20	39.00	2.84	-3.59	.05

Reasoning ability

As can be seen from Table 9, the difference between the mean of the poor performers' reasoning scores (39) and that of their population (49.20; max. 60) is statistically significant (.05). Contrary to the CL score pattern of the subjects, the reasoning-score pattern does not show cases where pupils with low scores scored high on the foreign language tests or had good grades in their foreign language.

Field Independence/Dependence

The difference between the mean score of the poor performers and their population was not statistically significant. A comparison between the three subgroups (poor, average and good) on reasoning ability, Field Independence/Dependence and Conceptual Level is presented in Figure 35.

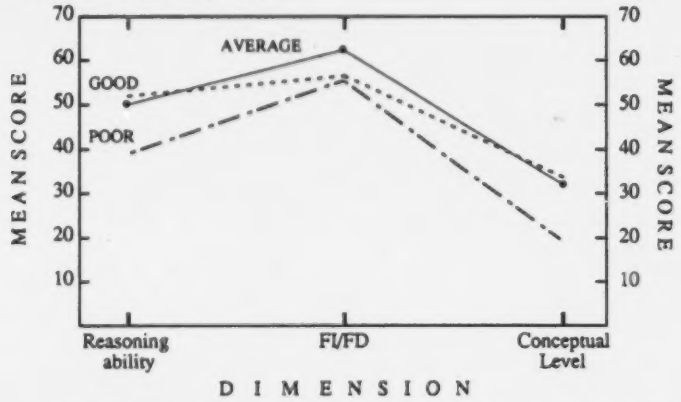

Figure 35. Comparison between the three subgroups on three cognitive variables (adjusted scale).

Correlations

Correlations between the three cognitive variables and the foreign language, mother tongue and mathematics grades are presented in Table 10. Mother tongue 1 includes reading, grammar and literature, Mother tongue 2 oral and written fluency.

The obtained correlations between foreign language grades and Conceptual Level as well as Reasoning ability show a high positive relationship. A coefficient of correlation is, however, always relative to the situation under which it is obtained, and its size does not represent any absolute natural fact. The correlations should always be interpreted only in the light of the circumstances under which they were obtained.

Table 10. Correlation matrix with seven variables (N=64).

	Foreign Language	Conceptual Level	Field In-dependence	Reasoning ability	Mother tongue 1	Mother tongue 2	Mathema-tics
Foreign Language	-	.51**	.18	.71**	.90**	.91**	.74**
Conceptual Level		-	.31*	.43**	.42**	.43**	.35*
Field In-dependence			-	.19	.11	.12	.30*
Reasoning ability				-	.53**	.55**	.74**
Mother tongue 1					-	.86**	.44**
Mother tongue 2						-	.60**
Mathema-tics							-

* significant at .05, one tail test, ** significant at .01, one tail test

Regression analysis

Multiple regression analysis was carried out on the data from all the 64 pupils, assuming the teachers' grades as the dependent variable with Nonverbal Reasoning, Field Dependence/Independence, and Conceptual Level as independent variables. A summary is given in Table 11.

Table 11. Summary of the multiple regression analysis with the foreign language grades as dependent variable (N=64).

Step entered	Variable	r (corr.)	R^2	Increase in R^2	p
1.	Reasoning ability	0.71	0.42	0.42	.05
2.	Conceptual Level	0.51	0.61	0.17	.01
3.	Field Dependence/ Independence	0.18	0.44	0.02	n.s.

Table 11 includes R^2, and R^2-change. The latter can be interpreted as the portion of the variance in the dependent variable accounted for by regression equation. R^2 shows cumulative percentage variance.

The multiple regression model accounted for 61 % of the total variance of the foreign language grades. Reasoning ability is by far the most powerful predictor for the grades in the model. Reasoning ability and Conceptual Level accounted for 59 % of the variance in foreign language grades. The Field Dependence/Independence did not significantly increase the explained variance. The foreign language grades correlated highly ($r = 0.71, p < .01$) with Reasoning ability and with Conceptual Level ($r = 0.51, p < .01$), but the correlation with FD/FI ($r = 0.18$) was not significant.

On the basis of the regression analysis model it can be said that, even taken alone, reasoning ability explains quite a significant amount of the variance accounted for the foreign language grades. It must, however, be pointed out that the amount of the explained variance is never absolute in any regression model but is always dependent on the combination of the selected variables.

Wechsler Intelligence Scale for Children - Revised (WISC-R)
All the four poor performers had normal intelligence, with total IQ scores ranging from 105 to 110. No big discrepancies were found between the verbal scale and the performance scale, instead they were nearly the same.

11.8.3. Social factors and foreign language learning strategies

Another objective of the research was to explore some social factors which had earlier been found to contribute to poor performance in studying a foreign language. Due to the lack of resources, the information obtained through a questionnaire and a structured interview with all 64 pupils had to be confined to two problem areas: 1) hobbies and academic ambition, and 2) attitude to school work. In addition, the social status of the parents was obtained in terms of father's profession (or mother's, if there was no father in the family). The information obtained of all 64 pupils was classified under the following headings:

Hobbies and academic ambition
Attitude to school work
Social status of parents.

In addition, information regarding motivation and responsibility in the foreign language studies as well as foreign language learning strategies was obtained of all 26 pupils studying Swedish as their foreign language. They were classified as follows:

Motivation/Responsibility
Foreign language learning strategies.

Motivation and responsibility were studied both through a questionnaire and an interview. In order to obtain the information about foreign language learning strategies, all pupils studying Swedish were interviewed. (For details about the questions, scorings, and reliability of the questionnaire and the interviews see Section 11.6. and Appendix 1.)

The means of the poor performers on the different variables were compared with those of their population. The results are shown graphically in Figure 36.

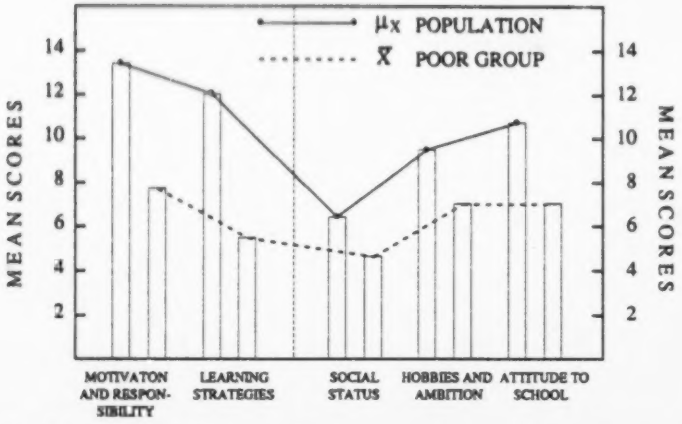

Figure 36. Mean scores of the poor performers and their population on five variables.

The means and standard deviations and the population means, along with standard deviations are given in Table 12.

Table 12. Comparison of the means of the poor performers and their population of five factors related to foreign language learning.

Variables	N	Mean of the popu-lation	Maxi-mum	SD	n	Mean of the poor performes	SD	t	Signifi-cance
Social status of parents	64	1.61	3	0.76	4	1.25	0.5	3.15	.05
Hobbies & acad. amb.	64	2.36	3	0.62	4	1.25	0.5	11.21	.01
Attitude to school	64	2.69	4	0.95	4	1.75	1.26	4.77	.01
Motivation/ Responsibility	26	13.42	18	2.98	4	7.75	1.26	9.0	.001
Foreign language strategies	26	11.88	18	3.95	4	5.50	1.0	6.38	.001

As shown in Table 12, the mean of the population on *social status of parents* (N=64) was found to be 1.61 (of max. 3), and the mean score of the poor performers in Swedish (n=4) was 1.25. It was found that, on the average, those who performed poorly on the foreign language tests were from lower social status background.

The mean score of the population (N=64) on *hobbies and academic ambition* was 2.36 (max. 3), while for the group of poor performers (n=4) it was 1.25. This shows that the poor performers had a lower academic ambition, and their hobbies had little

or no relationship with academic studies. It may be said that they had a realistic view of their opportunities. This is reflected in their attitude to school as well.

The motivation to study Swedish, their foreign language, was high among the good and average performers. The mean of the motivation scores of this sample (n=26) was 13.42 (max. 18), while that of the poor performers was 7.75. This dimension also included *the amount of responsibility they felt for their studies*. The poor performers' low score on motivation/responsibility must partly be regarded as a result of the lack of success in their foreign language studies. All four had been observed from the time they started to study Swedish. At that time, three and a half years earlier, they had all shown a great interest in the new subject.

The motivation/responsibility of the pupils is reflected in their *learning strategies*. The high scores of most of the pupils can be explained by the fact that for years they had been systematically trained to use effective learning strategies by their Swedish teacher. The poor performers, however, had failed to develop any systematic study habits in spite of this.

The average performers had acquired systematic working habits, although the time spent on home work might vary. They used to read the text once or twice, mostly silently, though. They checked in the glossary the words they did not understand and tried to say some sentences without looking at the text, then checking if they had said them correctly. Also, they regularly studied the words and phrases in the glossary, rehearsed themselves or with a parent, usually mother, helping them. They sometimes elaborated the text. This was usually done with a friend during the breaks at school. The elaborated text, in the form of a modified and/or expanded dialogue was then presented, i.e., acted in the class.

The good performers generally used less time for home work than the average. They said they mostly learnt the text in class when it was taught. At home they usually read it only once; the same applied to the new words and phrases in the glossary. The clearest difference between the good and the average performers was that the former elaborated the text more regularly and then not only with a friend but at home on their own. They sometimes tried to say the whole text without looking in the book and made questions about the text even when the teacher had not asked them to do so. Parents seldom helped them, except before tests.

Neither the average nor the good performers were able to describe how they arrived at an answer when asked a question in Swedish. They said the answer just came into their minds. Afterwards they sometimes monitored the answer and corrected it. They thought consciously about the correct use of grammar only if the answer was not correct and they were asked to try again. The errors they made in grammar were mostly mistakes that occur in spontaneous conversation. Especially when they were told where the error was they were able to correct it.

A comparison between the three groups (poor, average and good) on five background variables is presented in Figure 37.

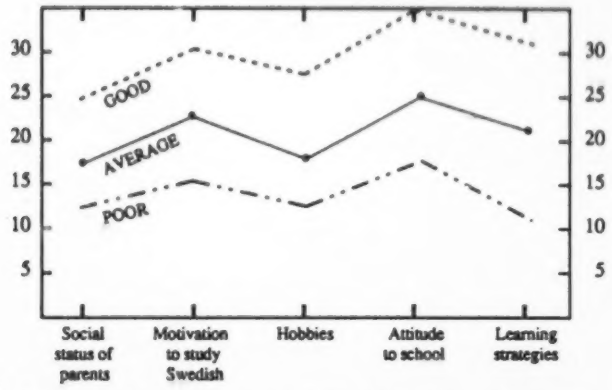

Figure 37. Comparison of the three groups on five background variables.

11.8.4. Case histories of the poor performers

There were three boys and one girl in this group. The boys improved considerably, especially two of them, but the girl went slightly backwards, showing no improvement at all. For the year following the remedial teaching the girl had chosen the easiest stream C,while the boys had chosen the middle stream B. Surprisingly, the girl showed some improvement during *that year,* while all the boys, who had chosen a more difficult alternative, went very much backwards. Occasionally they all received remedial teaching also during that year. The teaching was then given by the pupils' own Swedish teacher.

The poor performers' case histories reveal some details that indicate how important it would be to attend to pupils' problems both in cognitive and emotional fields as early as possible. The information gathered shows the following:

All the four pupils in the group of poor performers were found to have normal intelligence scores on the WISC-R test, but the reasoning scores measured by Raven's test were low. The two boys who improved most during the remedial teaching, also scored highest on Raven's test. All could read fluently but had problems with writing, especially handwriting and spelling - even when they were really trying to do their best. Two of them had reversals, difficulties with 'b' and 'd' as well as other dyslectic features. Although these children were very much inferior to their classmates in foreign language studies, they all liked their Swedish teacher. On the other hand, all the boys were on bad terms with their class teacher; two of them could not tolerate her at all. When looking at the case histories in more detail, it can be seen that nobody had a background without serious problems of one kind or another:

Case 1, boy. This boy scored 108 on the WISC-R, the verbal and the performance parts being equal. The differences between the subtests were also very small. He had difficulties with his mother tongue learning and had been getting remedial teaching for years. He had ordinary working class family background, and his family did not regard foreign language studies as important. The boy even several times remarked; "Mother said I needn't come here but I came anyway!" He was not as motivated to learn Swedish as some others in the group, but it could clearly be seen that although he had problems with his mother tongue he learnt both words and grammar more easily than the others. Also his results were slightly better than the others' - although he certainly did not work more. The boy was strongly left-handed, and his handwriting was sometimes illegible, with frequent reversals and bizarre spelling. It was extremely difficult for him to keep his hands and feet still, to sit still, or to concentrate on any task. He was very clumsy, and suffered from frequent migraine attacks. Taken as a whole, the boy's problems might suggest a slight brain injury. His scores on Conceptual Level and reasoning ability were low, but average on Field Independence/Dependence (13, max. 18).

Case 2, boy. This boy had the highest IQ of the four, 110, equally divided between the verbal and performance parts of the test, and with no big discrepancies in subtests. He scored, however, low on the reasoning test, as well as on Conceptual Level, but average on FI/FD. He had extremely poor grades in all school subjects except in sports and woodworks.

This boy had difficulties everywhere: at home, at school with his classmates as well as with his class teacher. He did not have even one friend, and was very unhappy about it. By special request, several pupils tried to be with him during the breaks, but he always started making trouble or fighting. He very often behaved disturbingly during lessons, but never during foreign language lessons. He was tall, physically early developed and good-looking. Yet neither boys nor girls liked him. He often came too late to school, had forgotten his books at home and had seldom done his homework. When asked why, he always answered, "I've got no time." He was only interested in sports activities, and he wanted to be a sport leader or a boat maker. Practically all his free time was spent on sports. He would have been able to do well at school if he had worked at least a little (the class teacher's information). The boy was extremely stubborn and very impulsive. During the lessons he did whatever he wanted to: he disturbed others, shouted, left his place when it pleased him, etc. It was impossible for the class teacher to handle him, and he had problems with other teachers as well. Even the headmaster had difficulties in handling him, and the boy sometimes simply had to be carried out of the classroom. Efforts were made to have him moved to another school to give him the chance of a new start in other surroundings, but the vicar intervened in favor of the boy, and he stayed where he was. He was good at handicraft, and always behaved well in the workshops. The experimenter once mentioned that she needed a wooden lid of a special construction for something, and the boy answered spontaneously: "I'll make it for you tomorrow." And he did. During handicraft lessons he had made some beautiful pieces, for instance for his foreign language teacher. He always behaved well during remedial teaching lessons, but the experimenter had a feeling he did it out of sheer politeness. His motivation for foreign language learning was low, but he did want to learn other things and was quite interested in history and geography.

This boy had been doing fairly well in his foreign language learning studies, and also in other theoretical subjects, until his parents divorced a couple of years before the remedial teaching started. In fact he had been the favourite of teacher trainees because of his pleasing and happy personality. (Information from the Swedish teacher.) The experimenter, too, knew him from the time he was a happy little boy. His father had been a football champion and was the boy's idol. After divorce he had emigrated to Sweden, and the boy very seldom had a chance to meet him. The boy did not approve of his mother's quickly changing new friends. His only real interest was sports, he went to football matches practically every day. He had a younger brother in the same school, and this boy was doing very well. The boy's mother had some vocational training and took care of the boys alone.

At the end of the remedial teaching the pupils finished their studies at elementary level and moved to another school. In the new school the problems of this boy got even bigger. He liked nothing there,

and had constant problems with all the teachers as well as his classmates. One day he tried to strangle another boy during a break. He was transferred to another school. Later he started using drugs, and also committed minor crimes. As a result he was sentenced and sent to an institution for maladjusted youngsters.

Case 3, boy. This boy had the same IQ as the girl, 105. He had equal scores on the verbal and the performance parts of the test, and very small differences between the subtests. He, too, was weak in theoretical subjects, but enjoyed handicraft and was doing well in that subject. He was also very fond of sports. In spite of his very low - much lower that the other pupils' - reasoning score, he scored high on Field Independence/Dependence (15, max. 18). He could not tolerate his class teacher at all, yet he always behaved well at school. When still a baby, he had been adopted into an academic family where both the father and mother were highly educated. The family had three girls of their own when the boy was adopted, and all the three girls did extremely well at school. He was sometimes helped by his family with his school work. He did not, however, have any academic interests or ambitions. The family was disappointed with the lack of school success, and he was compared with the highly successful sisters. Father used to help the boy before foreign language tests.

This boy scored lowest of the three on the language tests, both at the beginning, at the end, and one year after the remedial teaching. Yet, when leaving the junior high school after two additional years he was the only one who by that time had learnt some Swedish due to the continuous support from home (information from the headmaster and the foreign language teacher).

Case 4, girl. The general intelligence was found to be normal with the total IQ of 105, about equal in the verbal and performance parts. No big discrepancies between the different subtests were found. The girl's Conceptual Level score was also average, but her reasoning score was below the average of her class. On Witkin's FI/FD test her score was also very low (5, max. 18).

The girl's attitude to the remedial teaching was extremely positive from beginning to end, and her motivation to learn was higher than the boys'. Yet, even when she sometimes managed to learn some semantically important words, she had practically always forgotten them by the next time. During four years of foreign language studies she had not yet learnt any grammatical structures so well that she was able to use them correctly. Sometimes she was able to differentiate between the Swedish words 'to be' and 'to have' (verbs that cause difficulties for Finns, who use one word for them in their own language). The use of articles, the correct forms of nouns, pronouns, and verbs, the correct prepositions, and many other things were completely beyond her reach. During the remedial teaching lessons all the boys willingly helped her and also encouraged her frequently - even gave her beginnings of sentences and other hints for answers - yet she was able to learn only a few words. She could at least for some time remember numerals (1-10), and especially words reminding of those in Finnish: Swedish 'läkare', Finnish 'lääkäri' (doctor), Sw, 'mage', Fi 'maha', and some very frequent words like Sw. 'pojke', Fi 'poika' (boy) and Sw. 'flicka', Fi. 'tyttö' (girl).

The girl was not unusually anxious, neither did she behave in a nervous manner. Yet, during the period of remedial teaching she was worried about the following year, because she would then have not only one but two compulsory foreign languages. She was perfectly well aware that she was completely unable to master what the curriculum demanded. She was encouraged at home, and her best friend was a girl who was one of the very best pupils in the class, and very good in Swedish, as well. This friend helped her nearly every day with the school work.

The only girl in the group was a happy personality, always polite and helpful, and well liked by her teachers. She wanted to become a nursery teacher or a ballet dancer. Of her school subjects she enjoyed textile work most, and she was doing very well in it. She also had one of the top grades given by the teacher in it. She was also fairly good at music and physical education but in all other subjects she was doing very poorly indeed, having in most subjects the grade next to 'Fail'.

The unfortunate development of this girl's school performance in most subjects may partly be explained by events in her past. When she started school at the age of seven, she went to a Russian

school for two years. Her family had some connection with the Russian culture, and her parents wanted her to learn Russian properly. After two years the school, however, sent her to a Finnish school with the motivation that she had not learnt anything, and did not benefit from the teaching. Therefore she was two years behind her new classmates when she started at the Finnish school. From then on she was given remedial teaching in Finnish - her mother tongue - for several years. Her family background was ordinary working class, mother working at home. Especially the father had high ambitions for his daughter.

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In sum, the examination of the background of the group of poor performers illuminates some aspects that can hardly be left without considering when trying to understand the pupils' learning difficulties. The main difference when comparing the experiment with those of Letteri (discussed in section 8) is that in Letteri's experiment the parents' active help was essential, in addition, they paid a lot of money for the remedial teaching, which naturally increased their interest in results. Only the parents of the boy who was adopted in the academic family helped him with his school work, and even they, generally only for tests at the time of the remedial teaching. Because the boy later made some progress, there is a possibility of increased family support. This is in accordance with what the boy's mother promised to do when discussing the matter with the experimenter.

On the whole, what should not be forgotten is that all these pupils enjoyed *doing* things, and were successful in subjects where this could be done to a great extent. Even in foreign language studies most of them made some progress by working that way. After they finished elementary school, the foreign language lessons mainly consisted of the teacher's questions and the pupils' answers. The importance of emotional disturbances is also clearly reflected in the case histories.

The following question arises: how much do emotional problems affect pupils' cognitive functioning? What about neurological factors? Can the pupils' cognitive abilities be improved if these factors are completely left without attention? Are learning potential approaches at least one possible answer? The individual profiles of the poor performers are compared with the groups of average and good on the following pages in Figures 38 and 39.

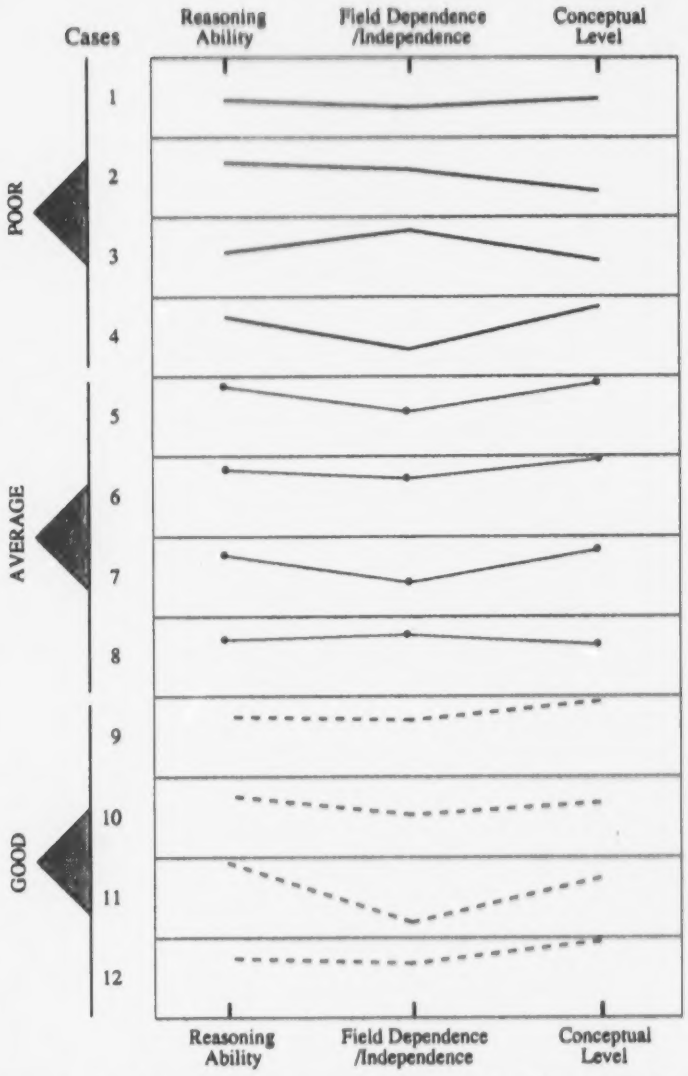

Figure 38. Individual profiles on cognitive dimensions of the subjects in the experimental group (adjusted scale)

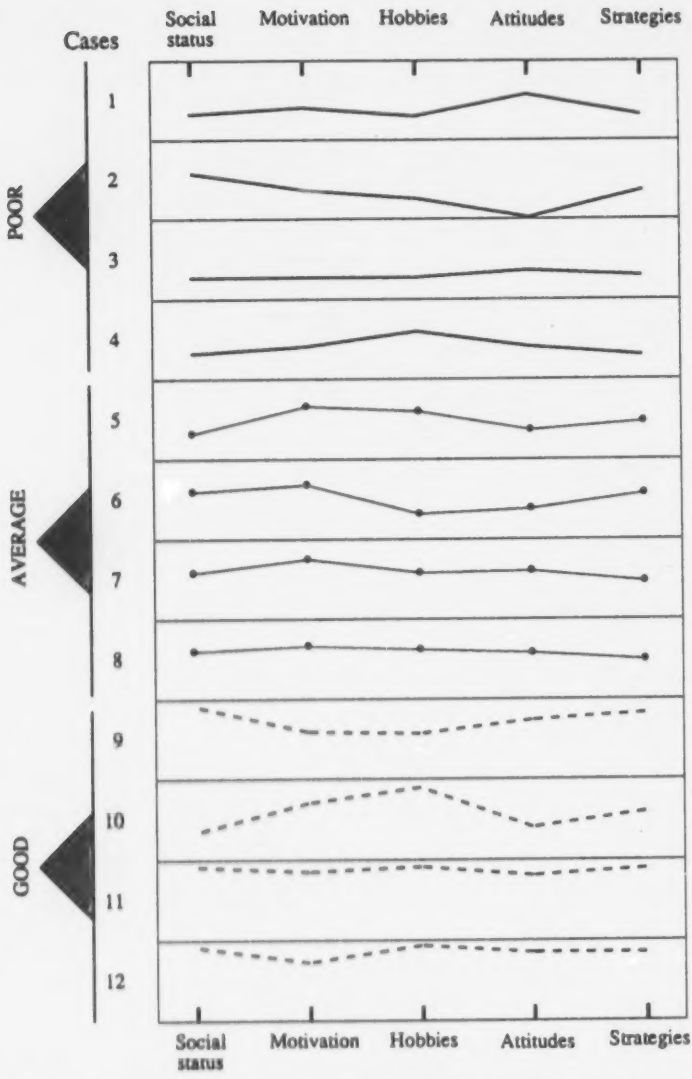

Figure 39. Individual profiles on some background factors (adjusted scale).

12. Additional experiments

12.1. An earlier start of remedial teaching

The main experiment was carried out with poor performers who had already studied Swedish for more than three years. As it turned out that their improvement was not permanent, it was decided to try to find out whether there would be a lasting effect provided remedial teaching was given early enough, e.g., soon after pupils start learning a new language. In addition, it was considered possible that better results could be obtained with students learning their *second* foreign language. It might be assumed that they, being older, had reached a higher stage of cognitive development. Further, having studied one foreign language for years, students are supposed to learn another foreign language more easily. Therefore, an additional experiment was carried out with older pupils starting to learn their second foreign language.

12.1.1. Remedial teaching after starting the 2nd foreign language

In grade 7, in a class of 28 pupils who had started studying Swedish as their second foreign language, it became evident towards the end of the first term that some of the students would probably have to be classified as poor performers. It was thought that remedial teaching might help them, provided it was started early in the following term. Under the guidance of the experimenter, a teacher trainee undertook to give remedial teaching at the beginning of the next term.

To find those who needed remedial teaching all the 28 students were given a foreign language test and Hunt´s Conceptual Level test PCM. On the basis of these tests three of the students - all girls - could clearly be seen to need extra teaching. Their CL values were 0.8, 0.6 and 0.8, respectively, while the mean for the whole class was 1.2, and for all the girls in the class 1.5. In the language test, with 5 subtests measuring the most central vocabulary and grammar, it was possible to score 40 points. The results showed that two of these girls could only understand and produce about 20% of what was required, and the third girl some more. The scores of the three girls were 9, 8, and 15 points, respectively. The school reports confirmed these results.

During a period of four weeks, six remedial lessons were given within ordinary school hours, except for one. Only one student took part in all the six lessons, the two others were present four times. These two showed no interest at all in school work. As an example can be mentioned that the only time the remedial teaching was given outside ordinary school hours, neither of them turned up.

After the six lessons the three girls were given a new language test, this time with 7 subtests and a maximum score of 50 points. Their scores were now 12, 11, and 24 points, respectively. As could be expected, only the girl who had been present regularly and had worked hard showed some progress. Her learning outcome in the ordinary

Swedish lessons also showed some improvement while the results of the other two did not become better.

The conditions under which the remedial teaching was given were not favorable for learning. The extra lessons could never be held in a suitable room, but in rooms not meant for teaching: in the library with other people present, or even in the corridor.

Information about the three poor performers, received from their previous and present teachers, showed that two of the girls - A and B - were very often absent from lessons, and disturbed the teaching when they were present by walking around whenever they wished, doing their make-up, etc. Girl C was always present, worked hard and behaved excellently, whereas A and B used to brag about never doing their homework and their lack of interest in school.

All the three had had problems with the mother tongue. In elementary school they had been given remedial lessons in it. Even now they were offered such help, but only C was willing to admit she still needed it while the other two did not accept any extra mother tongue lessons.

The family backgrounds of A and B were not very favorable. A's parents were divorced, and her mother had married again. She seemed to take no interest in her daughter's school work, while the parents of B had a negative attitude to education, finding it a nuisance. In the case of C, her parents seemed to have a positive attitude to school and were interested in her school work and progress. None of the girls had an academic home background.

Only one of the three poor performers was interested in and profited from the remedial teaching. The other two often said they knew beforehand they could not learn anything, having experienced that with so many subjects. The remedial teacher tried to encourage and motivate them, but with scant success. Occasionally they did seem to begin to show some self-confidence. To go on in these circumstances was not, however, considered meaningful. After six extra lessons and the second language test, the remedial teaching was ended.

12.1.2. Remedial teaching after starting the 1st foreign language

The second additional experiment was started in the autumn of the same year, with younger pupils studying their first foreign language. The purpose was to investigate whether remedial teaching would give better results if given as soon as clear learning difficulties were detected in the first foreign language.

Studying the first foreign language starts in grade 3 in Finland. At elementary level the pupils have only two lessons a week, and the progression is very slow. Still, towards the end of the spring term it is possible to detect clear differences between the poorest performers and the rest of the class. This is in accordance with the research findings of Sarmavuori (1983) who, on the basis of the grades given by the teachers, studied both mother tongue learning and foreign language learning.

Leena Laurinen (1985) found big differences in mother tongue text comprehension among pupils in grade 2. Differences in mother tongue abilities appear very early. Later (1990), Laurinen showed that even three-year old children differ considerably

in their ability to repeat stories they have listened to. She has further shown (1989) that there are big differences in the ability of grade 4 pupils to construct stories. Therefore, it is natural to assume that differences in foreign language learning also appear early.

The students in the second additional experiment were from the same school as those in the main experiment. During the first year of the foreign language studies it became clear that several learners needed extra help in their studies. Therefore, intensive remedial teaching was decided upon for them, starting the following autumn, in grade 4. Two teacher trainees were willing to undertake long-term remedial teaching with the same number of lessons as in the main experiment. The experimenter knew all the students, having followed the foreign language teaching in their classes from the beginning.

The project was planned together with the experimenter. As elaboration was meant to be an important part of the extra teaching, the project could be expected to have a chance of success. A group of six poor performers, four boys and two girls, was formed in the middle of October. They had been singled out from two different groups studying Swedish in grade 4 (N= 32). The two groups had the same Swedish teacher. All the 56 pupils in the two classes were given Hunt's PCM test and Raven's Progressive Matrices test. The means for the six poor performers were 0.68 and 36, as against 1.1 and 44.1 for the whole sample.

The 32 pupils from the Swedish groups were also given a language test, containing only tasks based on the most central vocabulary and grammar treated. The test was constructed with a view to find out how much discourse, in the form of dialogues and narratives, even the poorest performers were able to understand and produce. In addition, some simple and frequent content words, semantically grouped, were tested.

In addition to information given by the teachers, the two trainees also interviewed the parents or step-parents of the poor performers. Two of the boys came from broken families, with either their real mother or father missing. Especially the boy whose mother had left the family when he was an infant was thought to have suffered from the separation. This was stressed by the boy's stepmother. He spent his first years with relatives and in a children's home. When the remedial teaching was given all the six subjects were, however, living in fairly normal home surroundings, with parents or step-parents and, in most cases, with brothers and/or sisters. This situation did not change during the following couple of years.

With regard to the six pupils' attitude to school, the information given by the teachers was on the whole in accordance with what the parents and the pupils themselves said. None of the parents or pupils seemed to have a generally negative attitude to school, and all six had at least one subject they liked well. Two of the poor performers had serious problems with their mother tongue learning and were getting remedial teaching. One of them, the boy whose mother had left, was getting regular psychiatric therapy. The other four had various minor difficulties when reading or writing their mother tongue.

According to the teachers, only one of the six pupils sometimes disturbed in class, otherwise the members of this group seemed to have caused no problems of that sort

in their classes. Absence from lessons was not mentioned as a problem, either. Parents and teachers agreed that most of the poor performers lacked self-confidence and/or gave up very easily when something seemed difficult.

As for hobbies, reading was not one of them. The parents of three of the pupils told they had never read or only very seldom read to their child. One of the six, a girl, had been read to very often by her mother.

The group of poor performers were given 30 lessons of remedial teaching, twice a week for fifteen weeks. Two thirds of the lessons were given during the first term, one third during the second term. The two remedial teachers were present together and teaching in about half of the lessons. The experimenter had discussions with the remedial teachers whenever necessary, and was kept well informed about how the project developed. The remedial teaching was finished in the first half of February.

The six poor performers attended the remedial lessons fairly regularly, even when they had to come after ordinary school hours. According to the two teacher trainees, all of them grew gradually more positive and interested as the remedial teaching was progressing, and also seemed to get more self-confidence. This was also noticed by the Swedish teacher during their ordinary lessons. One of the boys did not want to continue after the first term. As his reason for this he gave that the remedial teaching interfered with the basketball training.

The aim of the remedial teaching was to develop the cognitive processes of the poor performers. They were never given very simple tasks like copying, nor tasks where guessing would be possible. Instead, they had to reason and make inferences in most tasks. Elaboration was used when practicing vocabulary and grammar. A lot of games, small competitions and songs were used especially at the beginning to make the teaching more motivating, and that seemed to have the desired effect.

The results of the **first test**, given at the very beginning of the remedial teaching to all pupils studying Swedish, showed that many pupils scored nearly 100%. As for the six poor performers, the test turned out to be difficult enough although only the most frequent structures and content words were used. The poor performers' *comprehension* scores ranged from about 35% to around 70%. Keeping in mind that the language in the test was a lot easier than what they met in their ordinary Swedish lessons, we have to conclude that many of the poor performers could not understand most of what they heard in their Swedish lessons. In the *production* part, their scores ranged from 20% to around 50%. In all the tests used, errors in grammar counted only half as much as errors in content words, provided it was possible to understand the message. If errors in grammar had counted fully, the scores would have been considerably lower.

The **second test** was given about three months after the end of the remedial teaching. This test, too, was given to all grade 4 pupils studying Swedish. It was constructed and scored on the basis of the same principles as the first one. For the six poor performers the *comprehension* scores were now 35% for the boy who had dropped out, about 70% for three, and about 90% for two, a boy and a girl.

The *production* scores were increased for all but the boy who had left. His score was now slightly under 20%. The next score was 32%, two scores were slightly above 50%, and the last two 76% and 84%. Again, the whole test was very easy for most of the other pupils, of whom many had practically everything correct. One interesting finding can, however, be mentioned: two pupils in the remedial group now scored higher than three average pupils in the class.

It seems reasonable to conclude that the remedial teaching had improved the learning outcomes of most of the poor performers. This is in accordance with what was found in the main experiment. According to their Swedish teacher, the poor performers had become more interested and active in their ordinary Swedish lessons and seemed more self-confident. Two of them also got slightly better grades than before.

The poor performers showed most improvement on vocabulary. They could now handle fairly freely some frequent verbs and nouns which earlier had caused difficulties. Several question words and adverbs were now used. In addition, they were able to use some prepositions more or less correctly. Earlier they only had *på* (on) and *in* (in), sometimes *till* (to) at their disposal. In fact, they had now so many words at their disposal that they had become interested in trying to produce real messages, not being any more satisfied with single words or very short sentences. As their command of grammar and abstract words was still very weak and had hardly improved, their longer messages were sometimes hard to understand.

None of the six poor performers could use grammatical rules systematically. Every now and then, however, they used grammar quite correctly. This happened mostly in common phrases and in simple affirmatory sentences, and sometimes even in questions where the word order differed from that of Finnish. Some typical examples are these:

Correct use: Jag kan spela fotboll. Du får låna... Jag tycker inte om...
Vad ska du göra i morgon? Vad vill du göra? Jag ringer dig.
Jag går till fotbollsmatchen. Kan jag komma med dig?
Jag vet inte. Jag tror att... Jag vill ha...
Mår du bättre nu? Om några dagar är du frisk.

Incorrect use: Kan du spelar skridskor? Kan du kör bil? Kan jag kom med?
Varför du kommer inte hos mig i går? När mats börjar?
Var är komma du? Har du är pengar?/Hur mycket är pengar?
Är ni har dyra fiskar? (<Har ni billigare fiskar?)

Long words and fairly abstract words practically always caused extra difficulties:
föräldrar (parents), förstår (understands), tävling (competition)
framför/bakom (in front of/behind), mellan (between), etc.

If the word was of great interest, even long words were produced understandably:
foot bolsmatsen, futbolsmats, fottbollsmatc, etc.

Some adverbs were fairly easy to learn, some caused great difficulties:
Easy: nu (now), ofta (often), lite (a little), ingenting (nothing),
vad? (what?) var? (where?) vem? (who?)
Difficult: kanske (maybe), ganska (rather, fairly), sent/tidigt (late/early),
snart (soon), sällan (seldom), aldrig (never), ibland (sometimes)
vart? / varifrån? (where to/from?), vems? (whose?)

Phrases where the same word can have slightly different meanings turned out to be very difficult to learn and were mixed up frequently, for instance:
på morgonen (in the morning)
i morgon (tomorrow).

The investigator was mainly interested in long-term retention. Therefore, it was decided to arrange a **retention test at the end of grade 6, i.e., more than two years later.** Again, the test was constructed and graded according to the same principles as the previous tests, and given to all the 26 pupils in the two Swedish groups. Some inferential tasks were, however, added because the pupils had been trained in them fairly regularly. All the tests were constructed and corrected by the experimenter and another teacher. Doubtful cases were solved by discussion.

Again the test was very easy for most of the pupils. Except for one pupil, the original poor performers were still among the poorest learners in the class. They were not, however, very far from the average students. The *comprehension* results were about 40% for the boy who had left the group, 60% for another, and about 70% for the other four. The *production* scores had improved more than the comprehension scores. We now find one of the poor performers with 45% as the lowest score, the next two with 54%, one with 72% and two with about 80%.

The second long-term experiment gives a certain hope that poor performers can be helped, provided the conditions are very favorable. The retention test showed that *high frequency words* and *words that were learnt easily* were remembered best. These results support the findings of Kotsinas (1982,1985). She has studied the language development among immigrants in Sweden. The results also support findings by Bahrick (1984) and Bahrick and Phelps (1987). They studied retention after fifty and after eight years. We should not, however, forget that even this group of poor performers must have spent a considerable part of their Swedish lessons without understanding what they were listening to. The vocabulary and grammar learnt will be dealt with in greater detail in a later study.

12.2. Comments on the additional experiments

The first additional experiment was not a success, there was some improvement only for one girl of three. Even so the experiment provided some important information, although not the information one started out to find. A new question arose: What can be done if poor performers are not at all interested in improving their learning outcomes? It turned out that two of the three girls caused problems even in the ordinary classroom situation. They were often absent and disturbed the teaching when present. It can be assumed that this kind of pupils are quite common among poor performers, especially among older ones. It seems obvious that offering such pupils remedial teaching in a foreign language will not help unless other problems are solved first. Their lack of motivation was very likely partly due to the fact that they had suffered many defeats which had affected their self-confidence. These students had difficulties in all theoretical subjects.

In connection with the experiments several practical problems arose as well. Even such a trivial problem as finding a suitable room for the teaching cannot always be solved. This last problem was encountered in the main experiment, too. This fact also restricts the use of music and additional audiovisual material in remedial teaching. Our schools, teaching as well as buildings, are obviously planned for the benefit of average, ordinary pupils.

The second additional experiment turned out to be of greater value. It was about as extensive as the main experiment, and the subjects were also tested more than two years later for a possible lasting effect. The results in this experiment confirm the results in the main experiment as far as the improvement effect of remedial teaching is concerned, but differ when it comes to the question of lasting effect. In this experiment a lasting effect was found for five of the six pupils, all those who completed the course. The boy who left the group halfway, scored lowest in Raven and also scored lowest in all the tests.

Some factors that may explain why a lasting effect could be found in this additional experiment, while hardly any in the main experiment, are easy to think of. To start with, this time the group of poor performers continued in the same classes and groups, with the same teacher and the same teaching principles in the foreign language.

Secondly, they had received the remedial teaching at a much earlier age and stage, possibly before they had started thinking of themselves as failures, a state of mind common among poor performers both in the main experiment and in the first additional experiment. It seems clear that it was much easier to motivate the poor performers in grade 4 than in grade 7. Maybe it is generally easier to create a positive atmosphere in the classroom for 10-year olds than for more critical and demanding teenagers .

A third factor that may have been important is that the poor performers in this experiment seemed to live in more stable home surroundings, at least in the actual period, than did the members of the corresponding group in the main experiment.

Taken together, these three factors may very well have had a positive effect.The possible lasting improvement was seen more clearly in production than in comprehension, which may seem astonishing. The most probable explanation for this is that systematic self-generated elaboration had increased the vocabulary learnt considerably and made it possible for the learners to construct real messages, not only isolated sentences. It is, however, necessary to bear in mind that errors in grammar influenced the scores only half as much as errors in vocabulary. The scores, then, in no way indicate that the language of the poor performers was satisfactory.

13. Discussion

13.1. The main problems and results

The main purpose of the present study was to investigate whether the poorest performers in foreign language learning could be given adequate help in their learning difficulties. It soon became clear that existing theories of foreign language learning offered no help, as they do not describe or explain nonlearning. Very little research has been done on nonlearning, maybe chiefly because it is difficult to measure and describe a process that is not taking place. The nature of the problem may also be so complex that a solution cannot be found through isolated research in the field of one science, whether it is pedagogics, cognitive psychology, psycholinguistics, or sociology. Perhaps it is possible to come nearer a solution by combining findings from several sciences, but such research seems simply not to have been done yet. Having this in mind, the only practical solution was to concentrate on the following problem: Are there foreign language learning theories that explain or at least deal with *learner varieties* and *simplified forms of language* ?

The Interlanguage Theory could not contribute much when the experiment was started, as it had so far primarily dealt with grammar and largely ignored the importance of vocabulary knowledge. Useful information about the basic requirements for communication in a foreign language had to be sought from other sources. Schumann's (e.g.1978a, 1978b) theory of pidginization can be of great value. Supplementary information can be found in research about foreigner talk, formulaic speech and other simplified registers.

The main experiment and the two later additional experiments were planned in accordance with the theoretical considerations above. The research was also built on Hunt's theory of conceptual level, theories of how to develop reasoning ability, and on the researcher's own extensive experience as a teacher and teacher educator.

Several problems were formulated before the main experiment was started. The main question was whether the foreign language learning outcomes of poor performers can be improved through extra teaching, and if so, how the teaching ought to be

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given. When going through the literature in the area, the investigator could not find any experiments with intensive long-term remedial teaching given to poor performers in foreign languages.

It was of interest to find out whether the teaching had the best effect when poor performers were taught with average and good performers present, or if the poor performers profited most from the teaching when they were in a group of their own. The only way to find an answer was to form a group of both good, average and poor performers for the first half of the period of extra teaching, and then teach the group of the four poor performers only during the second half of the period. This then was how the remedial teaching in the main experiment was organized.

An answer was also sought to the question of whether a possible improvement would be permanent or not. Further, it was asked if the foreign language learning outcome is related to the conceptual level (CL) of the pupils, and whether the CL scores of poor performers can be improved through remedial teaching given in accordance with their conceptual level. Another question asked was whether foreign language learning is related to reasoning ability.

The last three questions were whether the cognitive style of poor performers differs from that of good and average performers; whether poor performers differ from good and average in their foreign language learning strategies, their attitude to school and their hobbies; and whether some social background factors of poor performers are different from those of average and good performers.

The results obtained make it possible to give some tentative answers, keeping in mind the small samples. Three of the four pupils in the group of poor performers in the main experiment improved their learning outcomes considerably when they were given remedial teaching in a group of their own.

A test given one year after the end of the remedial teaching, however, showed that the improvement was not lasting. Therefore, two additional experiments were undertaken, in order to see if remedial teaching might have more lasting effect when started at an earlier stage of studies. The pupils in the main experiment were in grade 6 and had studied Swedish for three and a half years when the remedial teaching was given.

In one of the additional experiments *six poor performers in grade 4*, with Swedish as their first foreign language, were offered the same amount of remedial teaching (30 extra lessons) as the four poor performers in the main experiment. For the five who completed the course a lasting effect was found as late as two years after the remedial teaching was ended. The other additional experiment concerned three poor performers in grade 7, who had started to study Swedish as their second foreign language a few months earlier. This experiment, however, lasted just for one month, because only one of the three attended the remedial lessons regularly. For this pupil the learning outcome improved a little.

All the poor performers in the main experiment were found to be average on the general intelligence test (WISC-R), but scored significantly lower than the average

and good performers on Raven's test measuring inductive and analytical reasoning and on Hunt's conceptual level test. Field independence/dependence, measured on Witkin's GEFT, was not found to be related to foreign language learning.

The poor performers had adopted less efficient learning strategies than the other learners. They also showed lack of motivation and responsibility towards their foreign language studies, and on the whole their attitude to school was found to be less positive than for other learners. The parents of the poor performers were of lower social status.

In the following discussion, attempts will be made to find possible causes for the results obtained in the exeriments and draw some conclusions and propose implications.

13.2. General factors connected with the results

Several factors can help explain the results. When the learners were all taught together, the poor performers could listen to the better-performing pupils speaking, and even sometimes contribute something of their own. It was obvious, however, that they more often than not were unable to understand what the others said, especially when the good performers were speaking. The vocabulary of the poor performers was far too small, they did not even grasp the basic idea of what was going on.

When the poor performers were getting remedial teaching separately, they used and heard very much simplified language. They also got all the attention of the teacher. More time could be spent on their special problems. They probably also felt more relaxed, they did not have to fear that others always knew better. They may even have experienced the strange feeling - for them - of being best, being able to answer before others, or to know more words than others. It seems natural that this increased their self-esteem and motivation.

This gets support from what was reported from one of the additional experiments. The six poor performers in that group clearly became more self-confident, grew more active, and dared to offer an answer more often. According to their Swedish teacher, this was also noticed in their ordinary Swedish lessons and had a markedly positive effect on their work and learning outcomes in the Swedish language.

The improvement for the group of poor performers in the main experiment was not, however, permanent as was shown through the retention test after a year. It is not easy to find a clear-cut answer to why there was no lasting effect. Poor performers may need remedial teaching all the time, or at least in periods of very short intervals. If this is the case one would have to consider whether real learning takes place at all for this category of pupils. It is not reasonable, however, to draw any large-scale conclusions on the basis of the small sample.

Some factors can be mentioned that may partly explain the lack of a lasting effect. For the year following the remedial teaching the three boys in the group chose a stream (B or the middle stream) that was probably too difficult for them. This choice placed them once more in a situation where they, due to their small vocabulary and very limited control of grammatical rules, mostly could not follow and contribute to what

was going on in their Swedish lessons. The teaching was also quite different from what they were familiar with because no elaboration was used, but instead mostly questions and answers between the teacher and the pupils. The girl again who chose the easiest stream showed some improvement on her foreign language learning performance.

The results of the poor performers in the most extensive additional experiment (in grade 4) somehow complicate the pattern, but strengthen the explanation given above. Their results make it reasonable to assume that the improvement for most of them was lasting. Until the end of grade 6 these pupils were taught by the same teacher and with the same teaching practices as before, based on self-generated elaborations. Possibly as a result of this, they could follow and profit from the ordinary teaching as far as grade 6. The remedial teaching seemed to have a positive effect even two years later.

The difference in teaching conditions during the period after the remedial teaching may then explain why there was hardly any lasting improvement effect for the first group, but a fairly clear one for the second.The factors discussed so far are hard to measure, while the next section will take up factors that were measured and treated statistically.

13.3. Cognitive factors related to learning

Several questions were formulated in order to identify cognitive factors that might be related to the learning/nonlearning of foreign languages. The first question was whether the foreign language learning outcome is related to the conceptual level of the subjects, and whether the conceptual level can be improved by long-term intensive remedial teaching given in accordance with a person's conceptual level.

According to Hunt & Sullivan (1974), a child who has a higher CL-score than others of his own age will be able to perform tasks where complexity in information processing is involved, whereas a child with a low CL-score will not be able to perform such tasks efficiently. Subjects with low CL-scores may perform poorly on foreign language learning tasks because certain mediatory conceptual processes are weak or missing in their processing systems.

The results found in the present study are in agreement with the findings of Hunt and Sullivan. The CL-scores of the poor performers in the main experiment were very low compared with all the grade 6 pupils in the school (N=64), and the difference was found to be statistically significant. The CL-scores of the two groups in the additional experiments were also considerably lower than the means for their classes.

According to Hunt, the learning outcomes of poor performers can be improved only if long-time remedial teaching is given, in accordance with the conceptual level of each subject. Hunt uses the term 'long-time' to mean a period of at least two-three years. For the group of poor performers in the main experiment there was no improvement in their conceptual level after the intensive remedial teaching. They belonged to their original groups both before and after the remedial teaching period, as well as a year later. Since the period of remedial teaching only lasted one term, the findings are not contradictory to those of Hunt.

As for reasoning ability, the results suggest that it has a strong relationship with foreign language learning. Reasoning was the most powerful predictor (N=64). There was not a single case where pupils with low RPM-scores had good grades in their foreign language or scored high on the language tests. The same was true for the group of six poor performers in the additional experiment. Consequently, it seems well-grounded to assume that a certain amount of reasoning ability is necessary to perform the mental functions involved in learning a foreign language. The results support earlier findings by d'Anglejan and Renaud (1985) and Kristiansen (1990).

Motivation, responsibility and learning strategies in the Swedish language of the poor performers were significantly lower than among the others. It is reasonable to assume that these factors partly explain poor foreign language learning outcomes. The motivation to study Swedish was high among the average and good performers but low among the poor performers. The same was true of how responsible they felt for their foreign language studies.

This should not, however, lead us to conclude that the poor foreign language learning outcomes of the poor performers was *originally* due to their lack of motivation. We must be aware that when these pupils had started to study Swedish three and a half years earlier, all the poor performers had also been eager to learn and had shown a great interest in the new subject. Therefore, to claim that their nonlearning was due to lack of motivation must be erroneous.

13.4. Social and other background factors

Some other factors that might influence the foreign language learning were also looked into. For all grade 6 pupils (N=64) in the main experiment, information was gathered about hobbies and academic ambition, and about attitudes to their school work. The results show that the hobbies of the poor performers had little or no relationship with academic studies. For example, they were not keen on reading, except very light stuff like cartoons. Only one of them read a book every now and then. Two of them had got remedial teaching in their mother tongue for years. Similar information from the two additional experiments support these findings. Problems in reading and writing can have different causes: biological, neurological or emotional (e.g. Leiwo 1985; Lundberg 1985; Byring 1985; Korhonen 1988; Korkman 1988).

Maybe we can suspect a vicious circle here. All the poor performers had probably experienced quite early that reading was difficult and unrewarding. They must have felt they got very little in return for the time and energy spent on reading. Consequently, they reacted by reading only when they had to. Therefore, they did not get the training that might have made reading easier. Instead, they chose hobbies where their chances of success seemed better, such as sports. This might make it possible for them to increase their self-esteem, and also to obtain a better status among their schoolmates. Their hobbies did not, however, help them in their school work.

The poor performers also had a lower academic ambition than the other pupils. One can regard this as a symptom of resignation, or say that they had acquired a realistic view of their opportunities. They had accepted that they could not think of or even

dream of certain careers for themselves. This was also reflected in their attitude to school work. Behind their low academic ambitions we may assume experiences of failure in connection with most or all theoretical school subjects. They had probably become used to being losers, and understood and accepted the consequences.

As for the social background, it was found that the poor performers in all three experiments originally came from nonacademic homes. It seems fairly certain that this also had something to do with their low academic ambition. It is generally assumed that only quite good school results will make children with nonacademic backgrounds think of choosing an academic career.

It was pointed out above that all the poor performers were slow readers and not interested in reading as a hobby. One can suspect that when they experienced that Swedish as an exciting new subject also turned out too difficult, they reacted in the same way as to reading, and simply accepted that they could not do it properly and lost their interest.

When we look at the case histories of the poor performers in the main experiment, there are some positive features to consider. It can be assumed that all four had behind them years full of failures at school. Still, they were willing to try again and had not become totally negative to school and learning. They were also kind, polite, well-behaving in the remedial teaching lessons and when they took the different tests. In additon, we learn from their case histories that they all had some strong sides: they were good at handicraft or sports or both; one boy was interested in history and geography; the girl enjoyed needlework and had one very good friend and helper in her class and was on friendly terms with everybody. It is usually easy to become aware of the weak sides of poor performers. In order to help them it must, however, be considered more important to find out what strong sides they have and try to develop these and maybe concentrate on practical and social intelligence.

What is perhaps most striking when we look into the case histories is the great variation of problems we are confronted with. If this small group is representative of poor performers it means that the task of helping everybody in this category must necessarily be extremely difficult. Each case might require its individual solution, which may only be found after spending much time and resources to discover the causes of the problems.

The pattern does not change much if we add the case histories from the two additional experiments. The possible exception may be that the six poor performers in the second additional experiment lived in fairly stable families at the time of the experiment. It seems fair to assume that this fact partly explains why most of these pupils clearly profited from the remedial teaching, including a lasting improvement.

14. Conclusions

Certain limitations must be taken into consideration when drawing conclusions on the basis of the present study. The groups of poor performers were very small and taken mostly from one school. Further, all remedial teaching was given, or planned and supervised, by a researcher who probably had more experience of teaching and a wider knowledge of theories and teaching practices than most teachers. Therefore, one must be careful not to generalize too much. Even so, it seems safe to claim that some conclusions are well-grounded and can also be considered valid outside the context of the present study:

1. It seems reasonable to conclude that only under very favorable conditions can intensive remedial teaching improve the foreign language learning outcomes of the poorest performers.

2. Another reasonable conclusion is that the chances of lasting success are better if the remedial teaching is started as soon as learning difficulties are observed, and at the lowest possible age, i.e., whenever learning difficulties start to appear in the first foreign language. In the main experiment where the remedial teaching was started after 3,5 years of studies, the improvement was not permanent.

3. It was found that poor performers learn better and show better self-esteem when the teaching is given in a group of learners where the language abilities do not differ greatly. With a poor vocabulary it is not possible to understand what is being said by the other learners in the class.

4. As for the lasting improvement effect of remedial teaching, only tentative conclusions can be drawn from the study. It seems reasonable, however, to believe that the obtained improvement can only be lasting if the poor performers continue to receive fairly strictly structured teaching, which should also be aimed at developing their inferential and elaborative abilities. Improved learning was the result of teaching practices where concentration was on developing thinking by regular inferential elaboration tasks.

5. Thinking of background factors like family relations, it is difficult to decide on their part in the causes underlying poor performance. Considering all three experiments, a natural conclusion is that stable and secure family relations often seem to be essential to improve the foreign language learning outcomes of poor performers, and may also help making the improvement lasting. In addition, the support of the family was of vital importance.

6. An important factor connected with poor foreign language learning is that many of these pupils have problems with their mother tongue. Reading and writing is difficult for many of them; therefore, they do not enjoy these kinds of activities. Just attending foreign language classes twice a week and not hearing the target language in their surroundings, or reading it voluntarily, is not enough to learn an additional language.

7. Provided the poor performers treated in this study come from classes and schools that do not differ too much from the majority of Finnish classes and schools, one last conclusion can be drawn: an unknown number of poor performers, probably quite a big number, hardly profits at all from the foreign language teaching as it is now organized. The reason is simply that **most of the time they do not understand what is going on and what is being said.** This conclusion can safely be drawn from the results obtained in the main experiment as well as in the additional experiments.

14.1. Attempts to explain poor learning

By looking at the findings of the present study in the light of existing theories and earlier research findings, one may hope to explain them at least to some extent. This being done, the next step should be to find a theoretical basis for an assumption that some conditions can be changed, others not. As was pointed out in the theoretical part of the study, there is no single theory explaining nonlearning. Therefore, it is necessary to consult several theories, and not only such ones as primarily deal with foreign language learning.

Learning a foreign language is an active process, involving lots of cognitive strategies and skills. The learner has to discover how the input is segmented and how the segments are used to represent meaning, how units are assembled structurally, and then select appropriate vocabulary, and apply grammatical rules in order to make meaningful use of the language. For the poorest performers this complicated process simply does not take place.

Normally, controlled processes predominate during the gradual integration of subskills, later to become automatic. This requires the assessment and coordination of information from a multitude of perceptual, cognitive, and social domains (e.g. Bialystok & Sharwood Smith 1985; Nation & McLaughlin 1986a; McLaughlin 1984, 1985, 1987). These findings are based on Shiffrin and Schneider (1977, 1984; Schneider & Shiffrin 1977) who found that controlled processing requires far more processing capacity and more time than automatic processing. Poor performers always need much more time than other students to produce an answer. It seems reasonable to assume that they have not reached the stage of automatic processing. In this connection it must be remembered that the poor performers of this study were all slow readers, and most of them had had more or less serious problems with the mother tongue learning as well.

According to Karmiloff-Smith (e.g.1986), automaticity is not enough. Once the procedures at any phase have become automatic, learners step up to a higher, metaprocedural level. Thus learning involves constant modification of organizational structures. This view is related to that of Rumelhart and Norman (1978; Norman 1982), who, however, claim that learning is not a unitary process, but that there are different kinds of learning, among them restructuring.

In the present study it was found that although the poorest performers did not learn to use even the simplest rules of grammar systematically, they learnt to some extent to use grammar quite correctly in common phrases. In addition, grammar was often used correctly with high frequency words in affirmatory clauses, but for instance not in questions containing auxiliaries.

As there was no real learning of grammar, such concepts as formulaic speech, prefabricated routines and patterns were discussed. These registers are regarded as useful by an increasing number of researchers, especially during the initial stage of learning a foreign language. Most learners, however, learn to master grammatical rules, and go on from this stage. For poor performers it seems to be common that they are unable to make inferences and transfer rules from phrases they know and apply them to new situations.

This may be due to their weak reasoning ability. As we have seen, the subjects both in the main experiment and in the other long-term experiment scored low on Raven's test, which has earlier been shown to correlate highly with foreign language learning results (see e.g. Kristiansen 1990). Their scores on Hunt's test of Conceptual Level were also low, which may indicate that their sense of structure was poorly developed. Also, they generally lacked interpersonal maturity.

Perhaps it seems astonishing that poor performers mostly do not understand what is being said in language lessons. Even though they are very passive in the classroom situation, it is not unusual to claim that they learn by listening to others, although they do not contribute anything themselves. We should not be surprised, however. It has been clearly shown by several researchers that one must understand a quite high percentage - about 75% - of the content words used in a text or conversation even to understand what it is about. (For details, see Takala 1984a.) Even for vocabulary learning, reasoning ability is essential. The acquisition of word meanings depends largely on making inferences from the context. This has been shown by numerous researchers (e.g. Jensen 1980; Sternberg 1987; Curtis 1987).

To explain further why poor performers understand very little of what is said, one may remind of the simplified code labeled 'teacher talk'. Long (1985) found it to have slower speech rate, shorter sentences, fewer subordinations, more rephrasing, and more restatements. On the other hand, Håkansson (1987) showed that only five weeks after pupils had started to learn a new language, the language of the teachers became more difficult in all these features, especially in sentence length and lexical variation. Then it seems obvious that poor performers may quickly be left behind, understanding less and less, and losing what motivation they had to start with.

It was further shown in the study that remedial teaching may help the poor performers, but only to a certain extent. To explain this, it seems sensible to bring in Hunt's Conceptual Level approach first. According to Hunt (1975), people with a high CL are more effective in information processing than those with a low CL. To improve the CL-level requires remedial teaching for at least two years. In the experiments of the present study, it was shown that the CL-scores did not grow higher after the remedial teaching. This is in accordance with Hunt's findings. Taken together with the low reasoning ability of the poor performers, it may explain why they were unable to understand and use grammatical rules systematically, even *after* the double amount of teaching for nearly a whole term.

14.2. Attempts to explain the improved results

The remedial teaching had the best effect when the poor performers were taught in a group of their own. To find a possible explanation for this we can again start with Hunt. According to him (see Figure 16), the teaching environment may vary in terms of degree of structure. Low CL-pupils are likely to gain more from a highly structured approach, as they are weak at concept formation and, therefore, dependent on external standards. Naturally, the teaching can more easily be structured to suit only the poor performers when they are in a group of their own, as was the case in the experiments of the study most of the time. Also, it must be easier for the teacher to find what Hunt calls the 'reception frequency' in a homogenous group.

Another aspect that must be brought in here is the interaction of cognitive and affective processes. Dulay and Burt (1977) introduced the concept Affective Filter. They defined it as a mental block, caused by affective factors like high anxiety, low self-esteem, low motivation.

Hamilton (1983) also strongly claims that anxiety interferes with permanent memory retrieval processes. Several other researchers agree with them. It seems reasonable that poor performers tend to lose their anxiety and grow more self-confident when they need not feel inferior all the time, and this will, in turn, make them more motivated to learn. This is what was reported from the experiments.

Carl Rogers (1951) suggested that one of the best ways to facilitate the learning process is to establish an interpersonal relationship with the learner. Leontiev (1981) also stresses the importance of the emotional atmosphere of the classroom, while Hamilton (1983) goes so far as to claim that an emotional response is always a cognitive response. Especially for poor performers one may assume that warmth and acceptance are very important in order to make them feel worthy and valuable. It seems obvious that in a big class with all kinds of pupils it is an impossible task for the teacher to create such an atmosphere for the poor performers. On the other hand, it may be possible in a small and fairly homogenous group. It seems probable that the remedial teachers of this study were able to create learning conditions that met the requirements stated above.

It turned out that the remedial teaching had no lasting effect for three of the four poor performers in the main experiment as was shown in the retention test after one year. Nevertheless, in the long-term additional experiment the improvement was retained by five of six poor performers even more than two years after their remedial teaching. As we have seen, the teaching conditions differed.

A lasting effect was found for the pupils who continued to study under more or less the same conditions. The poor performers of the additional experiment went on in their old classes, with the same teacher and the same teaching practices, mainly based on self-generated elaboration. According to reasearch findings in cognitive psychology, memory is determined by the operations performed on the incoming information. The level of processing (deep, intermediate, or shallow) and the amount and quality of elaboration determine how well an item will be remembered (e.g. Craik & Lockhart 1972; Craik & Tulving 1975; Lockhart & Craik 1990; Anderson 1976, 1990; Anderson & Reder 1979).

This may partly explain why there was a lasting effect for the poor performers whose continued teaching was based on self-generated elaboration. New vocabulary and grammar were practiced through elaboration, which means that *the student has to think in order to make new combinations* on the basis of their memory. Even though poor performers work on their own with elaboration tasks, these will never be mechanical or based on guessing, but require reasoning all the time, as well as expressing one's own thoughts. We must keep in mind, however, that the poor performers did not learn to master grammatical rules. The causes for this must be the same as were discussed earlier.

From the case histories of the long-term experiments it can be seen that all the poor performers whose improvement lasted lived in stable families, at least during the time they took part in the experiments of this study. It also appears that the attitude to school was generally positive in their homes. The same was the case for the only girl who showed some improvement in the short-term experiment. The same two positive factors were not found for those whose improvement did not last. Instead, there were broken homes or a negative attitude to school, or even a combination of both. Again, it is natural to bring in Hunt's claim that poor performers need a more highly structured environment. This may be true of the home environment as well as of the educational environment.

There are no doubt both good and average performers from broken homes, but the higher reasoning ability and conceptual level of these pupils enable them to overcome the difficulties. As for family background, a growing number of researchers strongly stress its importance. It was shown in Part A how several investigators claim that poor or slow learners may be socially disadvantaged, not less able. Parents also influence their children's attitudes and motivation. It seems reasonable to assume that poor performers are more susceptible to the influence of their home surroundings than better-performing pupils are, who may even use their success at school as a sort of counterbalance.

14.3. Suggestions for ways to help poor performers

We hardly need research to conclude that nothing much can be done to alter the home backgrounds and family relations of poor performers, at least not within the frame of our school system. Instead, we ought to look at what possible changes might be made in the present curricula and the teaching of poor performers - changes based on existing theories and research findings.

The most ambitious goal would be to find solutions so that even poor performers could profit reasonably well from the foreign language teaching given in ordinary classes. To make this possible their reasoning ability and conceptual level would have to be improved first. Foreign language abilities are hard to modify by giving additional training in the foreign language (see Carroll 1985). Instead, it would be necessary to start learning potential programs for the poor performers *before* they begin to learn a foreign language.

Large differences in mastering the mother tongue can clearly be seen very early not only among students in elementary schools but also long before school starts. (See e.g. Kail 1979; Sarmavuori 1983, 1985, 1987; Laurinen 1985, 1986,1989, 1990a, 1990b.) On this basis it might be possible to select the pupils that need extra help to develop their reasoning ability.

Vygotsky (1978) distinguished between a child's actual and potential cognitive development. Several training programs have been constructed and used with success (see e.g. Feuerstein 1980; Pramling 1987a, 1987b, 1990; Brown 1978; Palincsar & Brown 1984, 1989; Brown & Palincsar 1989; Vauras 1990). Pramling, who has mainly worked with pre-school children, has concentrated on improving young children's metacognitive abilites. Feuerstein claims to have found clear transfer effects, especially when learning is based on insightful processes. The drawback is, however, that the pupils need 3 - 5 extra/remedial lessons a week for 2 - 3 years. This solution is an expensive one, as is Hunt's way of improving the CL-values of poor performers.

Palincsar and Brown report excellent improvement on learning from texts using reciprocal teaching. Their experiments do not, however, include foreign language learning. Such experiments in foreign language learning have not been reported. By now it is not possible to know if the poorest performers can learn enough foreign language vocabulary to construct different kinds of questions and make summaries, which are an essential part of the practices used in reciprocal teaching. Such teaching means tasks that require the learner to continually make inferences from the texts. (For details, see e.g. Takala 1984c.)

For economic and practical reasons it may be necessary to choose less ambitious but more realistic approaches. We should ask what theories and research to build on in order to organize the teaching of foreign languages to poor performers in a more meaningful way. First we would, however, have to define realistic goals and then try to find suitable ways to reach these goals.

Jensen (1970) presented a two-level theory of mental abilities. Level I ability is characterized by the lack of any need to transform the input in order to arrive at the output. Level II is characterized by transformation and manipulation of the stimulus prior to making a response. Concept formation and semantic generalization depend on Level II ability. In addition to Jensen, Eysenck (e.g. 1979; 1982) and Entwistle (e.g. 1985, 1987; 1990) among others point out that most standard intelligence tests demand Level II abilities. According to Jensen and Eysenck, teaching today is generally built on conceptual modes of learning. Therefore, many children with a weak conceptual ability learn far less than their good Level I ability would warrant. Entwistle, however, stresses that analytical skills can be taught.

Scribner (1986) uses the terms 'practical thinking' and 'theoretical thinking', the former referring to *mind in action*. The poor performers in the experiments of the present study seem to fit well into Level I of Jensen's two-level theory. It might then be sensible to concentrate on teaching them basic skills, both in vocabulary and grammar. The simplified registers discussed in the theoretical part might be used as a basis for the teaching. We should not, however, exclude the possibility that the learners' inductive and analytical reasoning abilities can be developed. This means that the teaching must be based on types of tasks that require making inferences.

An approach with simplified registers must not lead to nothing being demanded of the poor performers. We deceive ourselves if we try to make them happy just by leaving them in peace, with meaningless mechanical or guessing tasks in a big class. It has been shown, even in the present study, that increased self-esteem has a positive effect on motivation and learning outcome. According to Hamilton (1983), a self-concept of competence depends on *how we carry out tasks assigned by others*. As it is now, the poorest performers are given credit for just attending the lessons and showing a positive attitude to the language studied. No real learning is required.

A big discrepancy between criteria of adequacy and evaluation of performance is likely to result in low self-esteem. When an experience of inferiority has occurred in a frequent number of contexts, it may have become a principal cognitive structure or a superordinate schema (see Salonen & al. 1982; Olkinuora & al. 1984; Lehtinen & al. 1986, 1989). If we want to increase the self-esteem of poor performers they should be given tasks which they are able to master. These tasks must *not*, however, be too easy. Poor performers especially should feel they deserve respect when they work hard and manage to solve the problems. Only this will result in increased self-esteem.

On the basis of the present study, existing theories, and earlier research findings we may presume that the foreign language teaching for poor performers would have to be given in small, fairly homogenous groups, be structured in accordance with theories treated above and have by far less ambitious goals than for other pupils, but at the same time strive at improving the pupils' reasoning ability. The modest aim of the teaching should be of the kind that enables even the poorest performers to acquire a fairly concrete vocabulary, consisting of high frequency words in everyday speech. They might become able to talk about ordinary topics, but certainly not to understand or produce infrequent, abstract words and complicated grammar.

This approach, then, would be different from and probably more practicable than the first ambitious approach, where developing inferential abilities were suggested. One can suspect, however, that even this fairly modest program would be difficult to realize within the frames of our school system. If so, the arguments for not trying would probably be more economic and political than pedagogical in nature. In that case, there seems to be just one solution left, provided we do not choose continuously to neglect the needs of the poor performers. This neglect also brings along that they are given credit for just being present in class and performing meaningless tasks.

It was shown in the theoretical part of the study how recent research on practical and social intelligence has provided interesting information. Wagner and Sternberg (e.g. 1986), Scribner (e.g. 1984, 1986), and several other researchers agree that academic intelligence is not always needed for success in life. A person may have other strong sides in his personality even if his inductive and analytical reasoning in academic tasks is weak.This may be true of the poor performers in this study. Practically all of them had at least one subject they liked and were quite good at, and some of them no doubt had social intelligence, which enables one to get on well with other people.

The third and last approach to the problem would be to let the poor performers concentrate on what they are good at. That should make them feel they succeed in something. According to the theories and research findings discussed earlier, this would increase their self-esteem and might even have a transfer effect on other subjects. We can safely assume that by performing tasks that are meaningful to them, they would profit more from going to school than they do now. Instead of understanding practically nothing during hundreds and hundreds of foreign language lessons, feeling inferior and good for nothing, they could use the time to develop their skills and their feeling of achievement.

14.4. Further research

To investigate nonlearning is difficult. This concerns both finding theoretical explanations and conducting empirical investigations.To approach poor performers as a researcher involves many kinds of obstacles.There are few really poor performers in every class, which makes it problematic to bring together and study samples that are big enough. All kinds of practical problems will also have to be tackled even in case of small samples.

The most important thing when trying to solve the problem of nonlearning is, however, to admit that the problem exists. It is hardly an exaggeration to state that its existence is mostly denied and discussed very reluctantly. It is an old saying that the bearers of bad tidings never become popular. Therefore, it is no surprise that most attention is given to those who claim to have found the ways to teach anybody almost anything. When it is noticed that this will not happen in ordinary schools, the blame can conveniently be put on ineffective teachers.

On the other hand, when the existence of the problem is admitted, the will to solve it should also exist. As for the problem of nonlearning, one may suspect that the will

is not very strong. The reasons are easy to find. It is a problem for a fairly small group, and one which cannot be expected to make much noise or claim certain rights. It is also understandable that the task does not seem to tempt researchers. Experiments are difficult to organize and carry out, and most certainly hard to finance.

If somebody after all these pessimistic, or realistic, considerations should still have the courage to start further research in this field, it would seem sensible to follow guidelines somewhat like these:

1. The proportion of pupils in our schools that learn next to nothing during foreign language lessons must be established, i.e., the extent of the problem should be known.
2. Alternative goals for the foreign language learning, based on the theories of learner varieties, simplified codes, etc., should be set for the poor performers, in cooperation with the school authorities.
3. Teaching materials and practices to achieve these goals should be developed and tried out, on the largest possible scale.
4. As part of a research project, the probable costs of giving adequate help to the whole group of poor performers should be calculated.
5. With all the results finally treated and interpreted, one might be able to decide whether all or most poor performers can profit so much from a revised, simplified foreign language learning program that it is worth the cost. If the answer turns out to be negative, one would have to ask what they can be offered instead.

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The necessity of further research may even be questioned. Maybe we know enough, if only there is a will to use the available knowledge. Little can be done unless there is a political will to change the present conditions. Those within the school system who realize and admit its shortcomings should, however, see it as their duty to create the nonexistent political will. This may be the only way to help the poor performers, and thereby other pupils as well, who could then be taught more in accordance with their learning potentials.

The research findings and the discussion above mean that there hardly exists a better way of concluding this report than by citing H. W. Thoreau:

> *'If a man does not keep with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away.'*

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THE INTERVIEWS

SESSION 1

1. What hobbies do you have?
   (What do you do in your free time?)
2. What would you like to do when you are grown up?
3. How useful do you find school: a) not at all useful?
   b) very little useful? c) somewhat useful?
   d) rather useful? e) very useful?
4. How often do you do your homework in Swedish?
   (-always?)
   (-often? You have Swedish twice a week. What do you mean by often? Once a week? More often than once a week?)
   (-sometimes? What do you mean by sometimes?)
   (-seldom? What do you mean by seldom? Do you mean that you usually don't do your homework? ....less than once a week?)
5. When you neglect your homework why do you do so?
6. Do you sometimes forget your book at home?
   (How often?)
7. Do you get any help when doing your homework?
   (How?)
8. Do you usually work with your homework until you feel you are well prepared?
   (How long time do you need for it?)

SESSION 2

1. When doing your homework do you read the text silently or aloud?
   (How many times do you read it?)
2. Do you check the pronunciation of the words when you are not sure how to pronounce them?
   (How often do you do that?)
3. Do you translate the text into Finnish? (Orally or in your note book? How often? Do you copy the text? How often?)
4. Do you read the words and phrases from the glossary?
   (How many times?)
5. Do you rehearse yourself to be sure you know them?
   (How do you do it? How often do you do it?)
6. Do you write the words in your note book?
   (How often? Do you check the spelling?)
7. Do you rehearse yourself the sentences in the text?
   (How often?)
8. Do you make questions to the text?
   (How often? Do you make them orally or do you write them in your note book?)
9. Do you modify/elaborate the text?
   (Do you write down this version? How often?)
10. Do you stretch the text?
    (Orally or in your note book? How often?)
11. Are there any other ways you use when doing your homework?
12. Do you practice for tests?
    (About how long? How do you do it?)

TEST ANSWERS BY ONE POOR PERFORMER IN THE MAIN EXPERIMENT

a) Before separate group teaching

Namn S Klass 60

Ymmärrätkö rouva Granin lääkärille soittaman puhelun? Kirjoita keskustelu suomeksi.

- Får jag tala med doktor Berg?
Kiinä kuvun lääkäri Bergiltä?
- Ett ögonblick.
Onko hän kiireä.
-Min son Lasse har väldigt ont i magen.
Kiinä poikani on mahakipeä.
Kan doktorn komma till oss och titta på honom?
Tuleko matkusa tulet ja Titti tulee myös?

- Tyvärr har jag ingen ledig tid i dag.
Kiinä matkustan ihan yksin.

Men jag kommer i morgon på förmiddagen,
minä tulen huomen aamuna,
om han inte är bättre då.
eitarvitse olla vastassa.

Tom on ostamassa akvaarioonsa kaloja. Kirjoita kaupassa käyty keskustelu ruotsiksi.

Tom: Dyr där fiskar dyr?
Paljonko tämä kala maksaa?
Exp.: Trjukunde mk.
Kakskymmentä markkaa.
Tom: Den är ska rysk!
Se on liian kallis.
Den ska att fiskarnaj?
Eikö teillä ole halvempia kaloja?
Exp.: Den är liten fiskarna.
Meillä on pienempiä kaloja.
Den stora fiskar den att smala.
Mutta isommat kalat ovat kauniimpia.
Där du är pengar,
Paljonko sinulla on rahaa?
Tom: stormark Den den standvärk.
Sata markkaa. Voitin erässä kilpailussa.
Dej. ska liten fiskarna.
En pidä pienistä kaloista.

b) After the remedial teaching 5 **APPENDIX 3b**

Mieti, mitä lauseet olisivat suomeksi ja kirjoita alleviivatut sanat suomeksi annetulle viivalle. ÄLÄ suomenna mitään muuta.

1. Nisse berättar:

Jag slutade skolan i våras. Nu är jag arbetslös. Det är tråkigt.
Minä lopetin — kuomenessa — matkustin — kuomenna
Snart ska jag resa till huvudstaden. Det är kanske lättare att få
Tulen — Tulen pian — lähden myös
jobb där. Jag har släktingar där. Jag får bo hos dem, tror jag.
asuan — haluan mennä — Minä saan tulla sinne

2. Pelle berättar:

Jag tycker om att gå i skola. Men jag är ibland litet slarvig med
Minä tykkään palon koulusta — Tulen pienen ajan
läxorna. Då vet jag ingenting i skolan och blir arg på mig själv.
Minun en tiedä — mentävä en
Jag tittar ofta sent på TV på kvällen och då sover jag dåligt på
Minä tulen kuomenna — nukun minä kuomen
natten och är trött på morgonen, när jag vaknar.
kuomen — onnet kuomenna minä sinä

3. Lisbet berättar:

Jag var i Norge i somras. Jag förstod norska ganska bra. Jag stanna
Minä halua — Minä tahdon — Minä halua
bara en vecka, men jag fick se mycket. Jag tog många bilder.
tulla sinne — kaloja palon — Minä tahdo kuomenna
Mina föräldrar var inte med, jag reste med min kusin Maja.och
Minä tahdon
hennes vän Erik. Resan blev billig därför att vi bodde hos en
tulet — vaatavat — vielä tulla
norsk familj, som Maja kände. Jag vill resa dit tillbaka nästa somm
Maija osuat tulla. — Tulen ottamaan auto
koo.

4. Lars köper kläder i en affär:

Jag behöver en tunn skjorta och en tjock jacka. Pappa betalar.
Minä osuan tulla — kuitos — vasta

5. Lisa köper mat i en annan affär:

Jag vill ha fjorton små bullar, ett kilo korv och tolv flaskor läsk
Minä osuan kysyä — makkara — 12 lähtyjä
Är bullarna säkert färska? Jag får sju gäster i kväll. Jag måste
monet tulevat — monet — osuan
också köpa frukt, eller kanske mamma gör det. Vi ska först spela
monet tulevat — monet — monet
skivor, sedan ska vi dansa. Vi ska också sjunga och lyssna på
tulet sinne — kuuleki — kirjoja
kassetter. Nej, nu måste jag springa hem och städa. Jag har bråttom
sinne — suorta — hyvin — palon
Allt måste vara färdigt, när gästerna kommer. Förlåt, jag måste ju
Alku sanat — Huomoti!

Namn: S . . . . . Klass 6B

Tulkitse Tomin ja Kimin keskustelu ruotsiksi.

Tom: Var du i dag?
Mitä aiot tehda huomenna?

Kim: jag ska fotbollsmatch.
Menen jalkapallo-otteluun.

Tom: Var är kommer du
Voinko tulla sinun mukaasi?

Kim: ja, jag är ett biljett.
Kyllä, mutta minulla on vain yksi lippu.

Tom: Var du kommer i dag?

Miksi et tullut minun luokseni eilen?

Kim: jag är feber och mäje ont.
Minulla oli kuumetta ja vatsa kipeä.
läkaren kom och jag.
Lääkäri tuli ja tutki minut.

Tom: Var du bra mej?
Voitko nyt paremmin?

Kim: liten bra. Två dagar är ska.

Vähän paremmin. Muutaman päivän kuluttua olen varmasti terve.

Tom: Var du klockan deran?
Mihin aikaan ottelu alkaa?

Kim: jag vet inte mej.
En tiedä, mutta luulen,
den ska halv fyra.
että se alkaa puoli neljältä.
Ringer du fotbligt.
Soitan sinulle myöhemmin.

c) One year after the remedial teaching **APPENDIX 3c**

Namn: S Klass: 7.B

I Tulkitse alleviivatut kohdat suomeksi. ÅKES PAPPA BERÄTTAR:

Herr Lundström är kock, hans fru är sjukskötare. Vi är goda vänner. De bor nära
oli ostanut lääkäri hyvä ystävä matkustaa
oss. Vi är grannar. Vi bor i samma hus. Vi flyttade dit i somras. Det är ett...
Se on huonona samassa talossa, matkustanut kesällä
Min fru arbetar på en möbelfabrik, jag själv är chaufför. Tidigare bodde vi i...
Minun läkäryni ovat tuolleet, minun on autolla —
Tänään

ÅKE:
På sommaren är jag alltid hos min morbror. Han har en liten gård på en ö. Vi
mökillani minun mumma siellä on pieni kylmä.
simmar, ror och seglar varje dag. Vi äter färsk fisk direkt ur sjön.
uin, soudun ja purjehdan, myös kalastan veden,
Det smakar gott. Vi är ute hela dagen och kommer hem sent på kvällen.
Se maistuu hyvälle, aijan olla ulkona kokopäivän, kun tulen
käymään täällä
Jag är nästan alltid hungrig! Och trött! Mamma är ibland arg på mig därför att
väsynyt nälkä väsynyt maalla on kiire
jag är lite slarvid med läxorna. Men nu behöver jag inte läsa. Det är sommar.
vähän ajan kiikki läkyä nivä en lue
Mina föräldrar ska kanske resa till Danmark, men jag vill inte resa. Min hobby är
matkustan myös tanskaan ostan
är sport. Jag springer. Jag vann i går, men man kan inte vinna i alla
sen juoksen Minä menen, mutta en aina kaikki
tävlingar. Nu var Peter bättre än jag. Jag är också mycket intresserad av gamla
aina se on väsynyt monta vuotta vanha
frimärken. I kväll ska jag åka med pappa till flygfältet. Han har lovat ta mig
suostimykki. Tänään vaan lentokentälle oli menyt
på en flygshow.

II Tulkitse keskustelu ruotsiksi.

Per: Missä sinä olet ollut? Mitä olet tehnyt? Miksi tulet vasta nyt kotiin? Kerro
Var do har go? Var har den? Var do kommer
ny, nemma? Säg!

Åke: Olen ansainnut valtavasti rahaa. Istuin erään suuren puun alla ja näin
Har tjänder stört pengar. Sitt stor pedret
och sej.

ruskean lompakon lähelläni. Otin sen tietysti. Menin poliisin luo sen kanssa.
bler— sej Tar ständ. De polisen se tjänder

Eräs vanha mies oli kadottanut sen. Olen saanut sekä rahaa että suklaata ja lipu
jääkiekko-otteluun! Olen valtavan iloinen! Hienoa! Nyt ostan uuden jalkapallon.
Sen man har vekat Har ständ pengar att köpa
och ständ sjelkmatsen! Sej ständ ny! Ständ!
Ny pleda fotbollen.

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